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Practical Management of Pruritus Ani

Anemias of Colonic Diseases

Abscess and Fistula of the Anorectum

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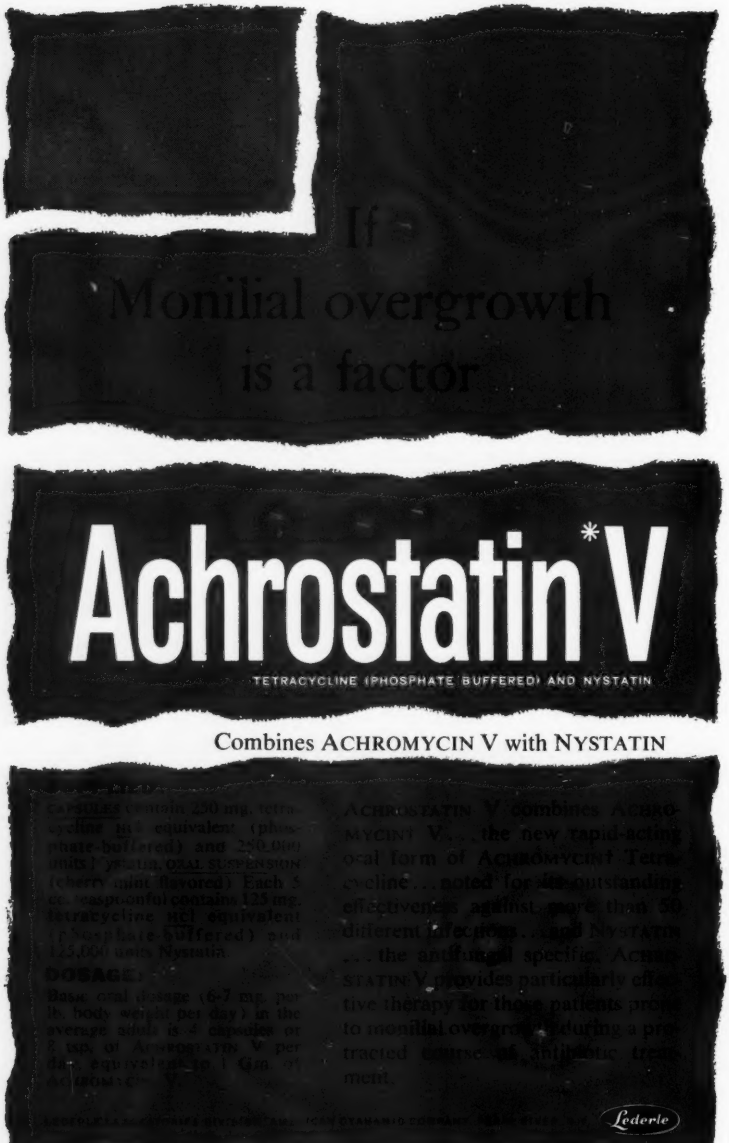
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LETTERS
To The Editor

This department is offered as an Open Forum for the discussion of topical medical issues. All letters must be signed. However, to protect the identity of writers who are invited to comment on controversial subjects, names will be omitted when requested.

Dear Doctor:

I have been reading with interest since 1951 the articles in the AMERICAN JOURNAL OF PROCTOLOGY, of which you are the Editor-in-Chief. I have been a subscriber since 1951.

I want to tell you that this publication is a source of pleasure to me . . .

I have been studying proctology for six years; from your very interesting articles and from the ones of the other contributors, I have acquired much very useful knowledge. For that I am also obliged to you.

The Medical Association of Milano has organized a trip to U. S. A. on the 28th of this month, and I am happy to be able to go.

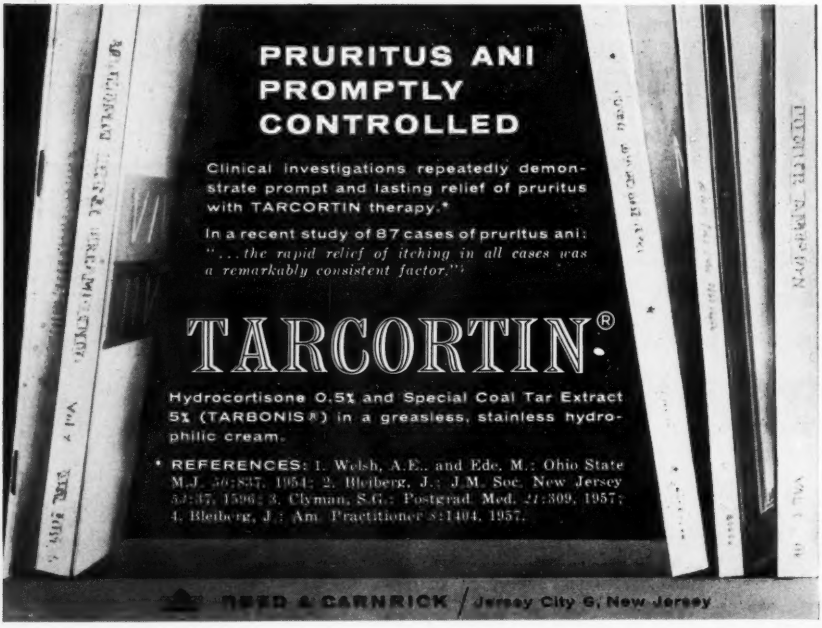
I shall spend only a week in New York, from 29th of March to 4th of April, and then I shall leave for Detroit and Chicago.

It is my great desire to have the pleasure of making your acquaintance and I hope to have the good fortune of observing you doing surgical treatments in your specialty, proctology.

When I arrive in New York I will take the chance of paying you a visit.

While I beg your pardon for my

—Concluded on page 104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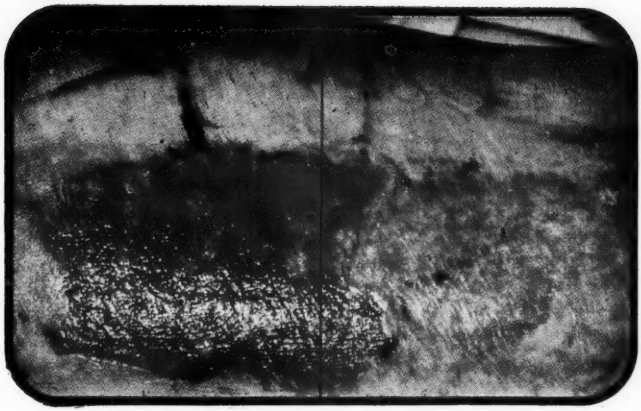

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LETTERS TO THE EDITOR——

—Concluded from page 96

faulty English, I send you my best regards.

Sincerely yours,
Carlo Villa

Dear Dr. Villa:

Thank you very much for your interesting and very complimentary letter. I am delighted to know that the journal has been of value to you, and hope that it will continue to be an important educational publication in proctology and gastroenterology.

I will look forward to seeing you in New York.

Sincerely,
The Editor

In psychosomatic medicine as applied to the intestinal tract we deal with reactions of the body-mind which manifest themselves chiefly in and about the stomach, colon, rectum and anus. However, the physician will readily understand that everything we shall have to say with regard to psychosomatic medicine of the intestinal tract may be applied in a less specific sense but with equal profit to a consideration of all other fields of medicine. Just as the mind and the body cannot be disassociated, so gastroenterology and proctology cannot be separated from any other field of medicine. The proctologist must see his patient in the entirety. So must the internist, the urologist, the dermatologist, the general surgeon, the cardiologist, etc.

A Handbook of Psychosomatic Medicine —With Particular Reference to Internal Disorders, by Alfred J. Cantor, M. D. The Julian Press, Inc., 1951. (Page 2).

Practical Management of Pruritus Ani

WILLIAM LIEBERMAN, M.D., F.A.C.G., F.I.A.P.*
Brooklyn, New York

Etiology and therapy in the common and troublesome condition of pruritus ani remain complex and probably somewhat confusing to those who have not followed the subject. A number of etiologic factors are accepted generally. In addition there are theories ascribing the great majority of cases to some single cause, each theory with its outgrowth of therapy. Some cases fit each of these theories, but no single theory with its etiology and therapy applies to all cases of pruritus ani. Each case must be considered individually.

Pruritus ani means an intractable perianal and anal itching from a known or unknown cause, characterized by periods of relief and by recurrence. This definition is accepted by most authors although a distinction is sometimes drawn by some of them, who apply the term only to those cases where the itching has ceased to be merely a symptom and the condition has become a disease entity. In these cases the symptoms persist after the cure of the original cause or where the original cause cannot be found. This persistence is attributed to changes in the skin, particularly in the sensory nerve ends, following a long period of scratching.

When the etiology cannot be found, the term idiopathic pruritus ani is used. The inciting cause is probably present but undiscovered or, less likely, the preexisting lesion may have undergone spontaneous cure leaving an altered skin to produce the itching. The term idiopathic pruritus should seldom be used as it would be strange if in the eternal chain of sequence which nature has welded there should be this single in-

* Attending Proctologist, The Unity Hospital, Brooklyn, N. Y.

From the Department of Surgery, Section on Proctology, The Unity Hospital.

Presented at the Ninth Annual Teaching Seminar, The International Academy of Proctology, at New York, May 1, 1957.

stance of an effect without a cause.

Just as we avoid a diagnosis of idiopathic pruritus so we have found it wiser to avoid the diagnosis of psychic pruritus when no etiology or skin changes can be found. Although psychogenic conditions may display protean manifestations, including itching, it is safer to search diligently for an organic cause.

In the practical management of the patient suffering from intractable anal and perianal itching, the primary step is the determination of the cause. Removal of this causative factor, in addition to simple hygienic measures, may suffice for a cure.

Practical management resolves itself into the following divisions:

1. Diagnosis of the causative lesion or lesions;
2. Local skin treatment, and immediate efforts toward symptomatic relief from itching;
3. Medical or surgical treatment of the causative lesions; and
4. General hygienic measures.

Diagnostic Procedure The following etiological classification is helpful. *Cause of Pruritus:*

1. Pathology of the anus, rectum, or colon;
2. Constitutional or allergic diseases (including gout, rheumatism, diabetes, food allergy);
3. Portal congestion;
4. Pathology in the pelvic organs with reflex reference of sensation to the anus, or direct perianal irritation by vaginal discharges;
5. Psychogenic (or psychosomatic) pruritus ani;
6. Idiopathic; and
7. Multiple causes.

When the history and physical findings point to an etiology in the second, third or fourth of the groups, of course the appropriate treatment in these branches is required in addition to treatment locally. A urine analysis, and, preferably, a blood sugar determination, is always advisable. A diagnosis in the fifth group, psychogenic pruritus, should be made with caution lest it later become apparent that this diagnosis was psychic only on the part of the physician.

By far the greatest number of cases of pruritus ani are attributable to pathology in the anus and lower rectum. After the history, a routine examination is made for rugae, skin thickening, tabs, skin growths, parasites, and discharge; digital, anoscopic, proctoscopic and sigmoidoscopic examination is done noting especially the presence of the following conditions, here named in the decreasing order of frequency with which they are found in relationship to pruritus.

1. Proctitis, or coloproctitis;
2. Hemorrhoids (principally skin tabs, thrombotic, prolapsing or ulcerating hemorrhoids);
3. Fistula;
4. Cryptitis and papillitis;
5. Parasites (examine feces for ova if suspected);
6. Healing fissure or granulating surgical wound; and
7. Moist growths, such as condylomata.

Fungus infections, particularly epidermophytosis, should be kept in mind since treatment with simple salicylic acid ointment will be beneficial. The diagnosis is aided by finding clinical evidences of epidermophytosis of the fingers and by laboratory examination of skin scrapings, by placing the scrapings into several drops of warm, fresh-

ly prepared, 10 to 40 per cent aqueous solution of potassium hydroxide on a glass slide. A coverslip is added. After a few minutes to allow the keratin to dissolve, microscopic examination is made for spores and hyphal and mycelian elements. Mycostatin is of value in fungus infections.

Proctitis produces discharges irritating to the rectal mucosa and perianal skin. This initiates itching, which appears to be really a subminimal pain sensation. The character of these discharges we have found to vary, being either alkaline or acid.

In a condition as intractable as pruritus ani can be, and as demoralizing and discouraging to the patient, it is necessary to advance the treatment simultaneously in all its aspects to effect a lasting benefit. But particularly to be stressed is the importance of giving some degree of symptomatic relief at once, lest the patient, too early discouraged, fail to continue with treatment. Such relief, at least partial, should be afforded on the occasion of the first diagnostic examination, or as soon thereafter as possible. This will serve also to break the vicious cycle of itching, scratching, excoriation, chronic secondary infection and further itching, and allow the skin an opportunity to heal undisturbed.

The measures advised are cleanliness of the local area, use by the patient of a witch hazel wash twice daily and after stool. Anesthetic ointments may sometimes make the condition worse by keeping the skin moist or by allergic reaction. The author has found a mixture of starch and zinc oxide to be soothing and protective to a badly damaged skin in the early stages of the treatment.

Some patients respond very well to hydrocortisone ointment. Coal tar ointment with starch and zinc oxide is helpful in cracked, abraded skin.

If these are insufficient to break the vicious cycle, resort is had to the subcutaneous injection of a solution of an anesthetic in oil to produce anesthesia of long duration. Relief may vary from complete cessation to marked improvement of the itching and may persist for months.

With oil injections, in certain types of patients, a tendency to sloughing may exist. Such are the aged, those with very old pruritus, thickened hard perianal skin, diabetics, those with poor circulation and with tissues devitalized by long continued trauma; also of course some luetic patients. However, these are not contraindications. Because of the occurrence of these conditions, at the first treatment I have found it best to inject in but one location, and a small amount, of approximately 2 c.c., so that a slough, if it should occur, will be limited in extent. Later injections may likewise be small if desired, but usually consist of 3 c.c. each, given twice a week. The needle used is a No. 20 or 21 gauge, two inches long, which is the narrowest gauge to permit the oil to flow properly. Upon conclusion of the course, it may sometimes be necessary to inject a few additional drops, following the patient's directions, into any small areas that have been missed.

Additional precautions will decrease or prevent sloughing, such as warming the oil before use, distributing it evenly a few drops at a time by moving the needle in various directions, then massaging gently with a bit of gauze and advising one or more hot sitz baths when the patient reaches home. The injec-

tions must be subcutaneous and made with a dry syringe and needle. Use of a wet syringe is frequently followed by pain. Finally, when an injection is followed on rare occasions by induration, the subsequent injection has been postponed a few days and the induration readily cleared up by hot sitz baths.

After some relief is afforded, appropriate medical or surgical treatment is applied to the pathology present, complete discussions of which are to be found elsewhere. For example, proctitis is treated by diet, sulfa drugs and instillations, skin tabs by excision under local anesthesia; internal hemorrhoids are excised or injected with sclerosing solution; helminths destroyed, and fistula excised.

Attention must be paid to general hygiene. The correction of constipation by mineral oil, or mild laxatives, diet, fluids, and moderate exercise is important. The patient is instructed as to cleanliness of the parts but must avoid excessive washing, dyed or excessively rough toilet paper and irritating or tight underwear. Overeating, condiments and alcoholic liquors are prohibited; the use of sweets is restricted. Instruction in the rules of general hygiene is given.

Only if these methods have been thoroughly and persistently followed without success should tatoo or neurotomy be done, as, for example, Ball's undercutting operation.

Summary

1. The treatment of pruritus ani requires attention to the factors of diagnosis, local relief, treatment of the cause, and general hygienic measures.

2. The methods of diagnosis and treatment, are described. The pathology is usually located in the anus, rectum or colon; proctitis heads the list of causes.

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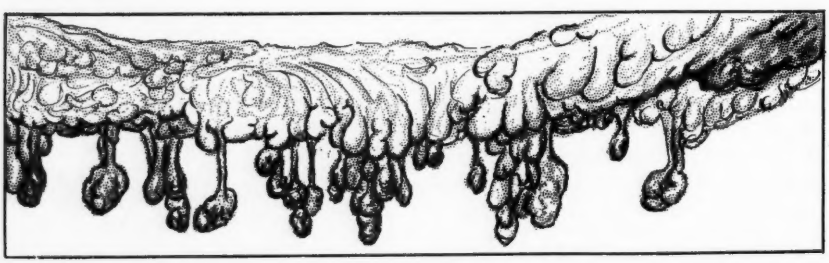

Multiple polyposis in the transverse splenic flexure and descending colon. Specimen is suspended to show size and length of polyps. (after Bacon)

Uses and abuses of

blood transfusion therapy

Anemias of Colonic Diseases

JACK J. RHEINGOLD, M.D.
Geo. Wash. Univ. School of Medicine
Washington, D. C.

Blood transfusion is one of the modern miracles of medicine which we as physicians have learned to accept with great equanimity. As it is true with other medical advances, transfusion can be obtained as simply as signing one's name to an order sheet. In recent years, there have been many advances in our knowledge which have lead to improvement in the collection, storage, selection and administration of blood. We have learned more about blood groups and types, about sensitization; we have improved our cross matching procedures; rubber tubing and other re-usable equipment have been replaced by disposable glass bottles, by silicone coated bottles, plastic tubing and plastic bags. All this has resulted in a tremendous increase in the use of blood. It has made possible striking advances in cardiac, thoracic and other fields of surgery. Exchange transfusion has become a routine method for the treatment of Rh and ABO erythroblastosis. What it accomplished during the Korean war is a fabulous record of life-saving. Blood collected in the States was flown to Korea where it was commonplace for twenty or thirty pints of blood to be given in the space of several hours to a single wounded soldier. However, there is another side to the blood transfusion story which must also be considered—the fact that blood is over-used, in situations where the indications are vague despite the serious inherent dangers of this valuable substance.

It is my purpose to review the indications for transfusion, to consider the toxic reactions which occur and their frequency, and to discuss the abuse and over-use of this "mixed blessing."

Mollison[1] has listed six major indications for the transfusion of blood in anemia. They are:

1. anemia produced by hemorrhage which is likely to recur
2. hemolytic anemia
3. aplastic anemia (also refractory anemia and leukemia)
4. anemia of sepsis
5. any severe anemia in a person who has to undergo an operation

6. anemia in a pregnant woman near term

The first five of these are variously encountered in the treatment of colonic diseases, and regularly constitute indications for transfusion.

Blood loss anemia is the most common form of anemia seen in medicine. Bleeding from the bowel is a serious symptom that warrants the most careful investigation. No group of physicians understands the potential lesions which may cause rectal bleeding any better than this one. It is a great error to treat anemia of this kind either by transfusion or more conservative measures without first finding its cause. However, once the cause is known, the indication, or lack of it, for transfusion likewise will be evident. If the bleeding is due to a rectal polyp which is found and removed, the treatment of this iron deficiency anemia due to blood loss is iron by mouth and not by transfusion. If the patient has ulcerative colitis or some other lesion where bleeding is apt to recur and the anemia continue or worsen, the hematocrit should be raised to a safe level by transfusion. Bleeding from malignancies, colitis, diverticulitis and hemorrhoids, etc., must be separately considered when it occurs. For example, most patients with hemorrhoidal bleeding do not have severe anemias and once there has been surgical correction, iron by mouth is the treatment of choice. On the other hand I have seen bleeding from this area to the degree that a severe anemia and bouts of fainting occurred. There was no question that transfusion was indicated in the situation.

Hemolytic anemias are not commonly seen in the diseases under discussion, but occasionally an acquired hemolytic anemia may complicate a malignancy of the bowel. The treatment obviously lies in correction of the underlying cause, for example by removal of the malignant lesion by surgery, or amelioration by chemotherapy or x-ray. The steroids may be indicated, and often the life of the patient must be maintained by transfusion until an equilibrium can be reached.

A third indication for transfusion is in the patient with a severe anemia about to undergo surgery. Obviously many of the previously mentioned conditions would fit into this category. I emphasize the word severe, however, because the preparation of such a patient does not necessarily mean correction to normal of lesser anemias. Thus a patient with a hemoglobin of 12 grams does not need to be brought up to 15 grams, particularly since it may take several pints of blood to accomplish this, with little benefit to the patient. Nor is it necessary or proper to anticipate blood loss at surgery by transfusion in a non-anemic patient.

The anemia associated with sepsis is apparently caused by an interference with normal hemoglobin metabolism and therefore reduced blood regeneration. Although usually seen associated with chronic infection, it may also accompany more acute ones. Ulcerative colitis and occasionally the dysenteries, amebic and bacillary, fit into this category. The anemia of ulcerative colitis is also undoubtedly contributed to by blood loss, faulty diet and in some instances by poor absorption from the bowel. Blood plays an important role

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in the treatment here not only for the anemia, but occasionally in the treatment of shock as well.

These constitute the major indications for the use of blood in the treatment of the anemias accompanying colonic disorders. No one would deny the greatness of the contribution of blood transfusion to medicine and yet its dangers must also be recognized. Where there is specific indication, these risks are well worth taking, but such risks must not be accepted when the indications are vague or absent.

How serious or how frequent are these complications of transfusions? Actually, I think we can only document a portion of them because many reactions occur which never are brought to the attention of the blood bank service where such statistics might be collected. This is particularly true of pyrogenic and allergic reactions.[2] Homologous serum hepatitis occurring several months after transfusion likewise is more often than not a lost statistic.

It has been estimated that about four to five million pints of blood are given yearly,[3] and undoubtedly the number is increasing. Since the mortality rate is about 1:1000 to 1:3000,[4] about 1700 people die yearly as a result of blood transfusion. The risk of blood transfusion thus is about that seen with uncomplicated appendectomy[4]—would that similar consideration given to that common surgical procedure be extended to the problem of whether or not a patient should receive blood. The morbidity from transfusion reactions assumes much greater proportions. It has been estimated that 3-4% of all transfusions are accomplished by some sort of a reaction.[5, 6] As Dr. Davidson[7] has pointed out furthermore, "for seriously ill patients, even so-called minor transfusion reactions may not be without danger."

Dr. M. Wintrobe in his book[10] has listed the various transfusion reactions with their causes and known statistics.

To this excellent table might be added

TRANSFUSION REACTIONS

TYPE	CAUSE	FREQUENCY %
Pyrogenic	Bacterial pyrogens, etc.	1.8-2.9
Urticarial	Sensitivity to (?)	0.8-1.1
Hemolytic	Mismatched blood	0.1-0.5
Isosensitization	Sensitization through repeated transfusions and preg.	Not rare
Circulatory overload	Injudicious augmentation of blood volume	Not rare
"Cold reaction"	Cold agglutinins (?)	Not rare
Transmission of disease	Homologous serum jaundice	0.45-1.0
	Syphilis, malaria, etc.	Rare
Plasma sensitivity	Heat-labile plasma factor	Esp. in PNH
Infections	Grossly contaminated blood	Rare
Air embolism	Entry of air into veins	Rare
Fat embolism	Transfusion via bone marrow	Rare
Hypocalcemia	Exchange transfusion	Not rare
Hemorrhagic diathesis	Massive transfusions, etc.	Rare (?)

also hemosiderosis which occurs after multiple transfusions.

Homologous serum hepatitis is a particularly distressing complication. At the present time we have no routine, dependable method for screening out potential carriers, except by history, and as a result this transmissible disease regularly occurs. Although said to occur in 0.45 to 1.0%, this figure may actually be higher because of unreported cases. Not only may chronic liver disease develop as a result, but the mortality from this disorder alone varies from 0.2% to as high as 10% in selected series.

If the administration of incompatible blood is stopped as soon as symptoms develop, no serious harm may result. However often renal failure develops along with hemolysis and hemoglobinuria and death is a not uncommon result of this complication. Time does not permit a lengthy analysis of the various complications of blood transfusions. Suffice it to say that this is an imposing list which should give pause when the question of transfusion is raised. Since these dangers are real, and occur often enough to warrant serious consideration, where might it be said that the use of blood is abused? Most simply, when there is no indication for it. A low hematocrit does not constitute an indication for transfusion when more conservative therapy is available. Blood must not be used as a tonic or as a convenience.

As Straus and Torres[8] point out, blood should not be given for the "maintenance of the morale of anxious relatives." These investigators did a most revealing study. They followed 106 patients for six months who had received some 290 pints of blood. Using liberal criteria, it was their feeling that some 13% of the blood used was never indicated. They discovered 10 definite reactions and 5 questionable ones; it is interesting that half of these reactions occurred in the patients who did not have adequate indication for blood in the first place.

Blood has often been used during surgical procedures when the patient was not anemic, and the blood lost at that operation was minimal. There is no clear cut evidence that such patients "do better" and furthermore blood given under anesthesia adds further danger in that warnings of transfusions reactions are masked. Anaesthetists are becoming more acutely aware of the overuse of blood and one sees more and more the use of fluids in place of blood during surgical procedures.

Cantor[9] in a recent discussion on the medico-legal aspects of blood banking made the following statement, "I know you will be amazed, and you should be frightened, by the number of patients receiving a total of 1 unit or 500 cc of blood." Certainly I would agree this is a common occurrence and yet it is difficult to think of conditions which would warrant or require a single unit of blood which could not have been adequately treated in other ways.

Perhaps the situation might best be summed up by the following statement by Greenwalt: "One of the axioms of clinical transfusion practice might well be the following: whenever the question arises as to whether a patient should be given a single pint of blood, think twice and count through the list of dangers up to ten; perhaps the urge to write the order will pass."

Conclusion

The use of blood in the treatment of the anemias associated with colonic disease is of great benefit and is often life-saving.

The fact that complications of transfusion can occur should not deter its use where it is specifically indicated. However, because of these inherent dangers, blood should not be used when there is no clear cut demand for it or where other measures will suffice.

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ABSCESS AND FISTULA OF

Although abscess and fistula of the anorectum is a common and frequently encountered proctologic condition, it is often overlooked, incorrectly diagnosed, incompletely treated, and is notorious for its recurrences. The writer will attempt to present in as brief a manner as possible, all of the practical aids he has found helpful in an exclusive proctologic practice of over thirty years duration.

Definition An abscess in the anorectal region is the same as an abscess in any other part of the body. However, anorectal abscesses tend to be complicated by fistulas.

Classification

- ABSCESS BELOW THE PELVIC DIAPHRAGM (Fig. 1)

The following are the various types encountered:

Cutaneous
Submucous (marginal)
Ischiorectal
Unilateral B
Bilateral (Horseshoe)

- ABSCESS ABOVE THE PELVIC DIAPHRAGM (Fig. 1)

The following are the types seen occasionally:

Submucous (interstitial or mural)
Superior rectal space
Retrorectal

Etiology Although there are numerous predisposing factors, the writer will mention only the most common causes, such as cryptitis, fissure-in-ano, anorectal strictures, diarrhea, dysentery, and ulcerative colitis.

The most common exciting causes are the closure of an infected crypt, by a seed, fruit pit, particles of food, the fibrous contraction of the anal canal (pectenosis) causing a closure of the crypt opening; deep invasion of a fissure-in-ano, and invasion of infection from a crypt into an anal gland.

Most anorectal abscesses start in an infected crypt. After the abscess has formed, the pus burrows in the path of least resistance, depending on the host's tissue resistance and the location. The swelling, redness, fluctuation, increased temperature, and increased white count are the same as elsewhere in the body.

General Treatment Suggestions

Constant pain, induration, swelling and redness around the anus call for immediate incision and drainage. Don't wait for fluctuation. An evening rise in temperature plus an increased white

THE ANORECTUM

MANUEL G. SPIESMAN, M.D.*
Chicago, Illinois

count help to establish the diagnosis. Where constant pain around the anus is complained of without visible evidence of an abscess, the bidigtal examination method will frequently locate the indurated swelling (Fig. 2).

A stab wound will not give sufficient drainage. A large crucial incision should be made externally, as closely opposite the internal indurated depression of the crypt as possible. The corners of the stab wound should be liberally excised to permit proper drainage and healing of resulting cavity. The index finger is then inserted into the abscess cavity, and all trabecuale are broken up, converting the many small compartments into one large cavity. (Fig. 3) This is best done under a general anesthetic as the procedure is painful,—but necessary for a good result. The cavity is then painted with 50% phenol in oil and packed with iodoform gauze. The packing is partially removed in 24 hours and completely in 48 hours. No more packing is necessary. Hot sitz baths morning and night are recommended. The opening of the abscess cavity should be kept open until healing from the inside out is complete, which usually occurs in about four to five weeks. Tuberculous abscesses are treated as any other abscess.

In the past 15 years we have been incising the accompanying crypts or fistulous tracts *immediately* after the abscess procedure previously described. This has removed the need for a second operation, with its accompanying added expense and loss of time from one's business or profession. This can be accomplished in the majority of such cases by locating any crypts opposite the abscess and incising same. This completes the removal of both the abscess and the crypts, which would have later remained as a residual fistula.

Infralevator Abscesses

Cutaneous Abscess (Perianal Folliculitis, Furuncle)

Symptoms: The symptoms are like those of any furuncle.

Treatment: The surface of the fur-

* Associate Professor of Proctology, Chicago Medical School; Associate Editor of the American Journal of Proctology; Formerly Head of the Rectal Clinic, Cook County Hospital, Chicago, Illinois. Author of book "Essentials of Clinical Proctology."

uncle and the surrounding area are painted with tincture of iodine, permitted to dry, and followed by 90 per cent alcohol. The apex of the pustule is then scraped off with a scalpel. Following this, a fine wooden applicator dipped in 95% phenol is inserted into the depth of the infection. X-ray treatment can be used with excellent results.

Submucocutaneous Abscess (Marginal Subtegumentary)

Symptoms: The usual onset is that of a sharp, shooting, anorectal pain which is soon followed by a constant, increasing, aching, throbbing pain. There is also an associated increase in pulse rate, rise in temperature, and difficulty in sitting and urinating.

Diagnosis: Occasionally one sees a patient complaining of continuous anorectal pain with no visible evidence of an abscess. Placing the index finger in the anorectum, and the thumb on the perianal area, palpation around the ring will reveal the abscess as an indurated, painful swelling. An increase in the evening temperature, plus an increased white count, further help to establish the diagnosis.

Treatment: See "General Treatment Suggestions" given previously.

Ischiorectal Fossae Abscess

This is one of the most common forms of anorectal abscess.

Symptoms: The symptoms here are similar to those of a submucocutaneous abscess but are more severe. The patient may develop chills, high temperature, severe headaches, backache, fetid breath, lanquor and more or less prostration. The pain is constant and is aggravated by bowel movements. Frequently, the patient is unable to urinate, has difficulty in sitting, and has increased pain on coughing.

Presented at the Ninth Annual Teaching Seminar of the International Academy of Proctology, N. Y., April 29, 1957.

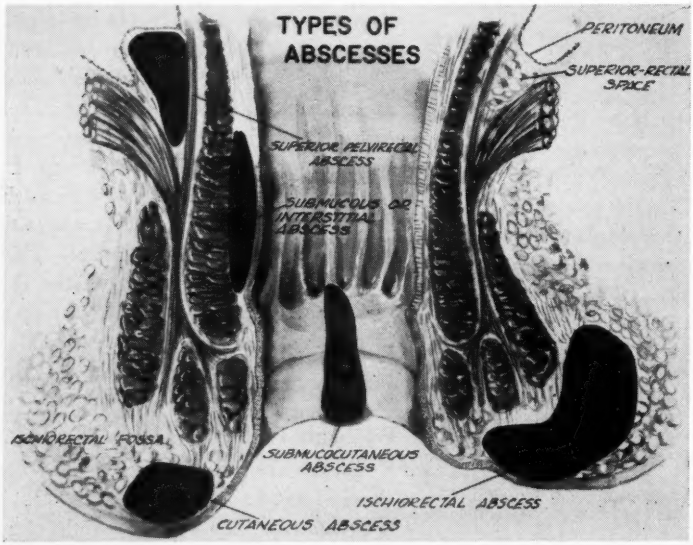


FIGURE I

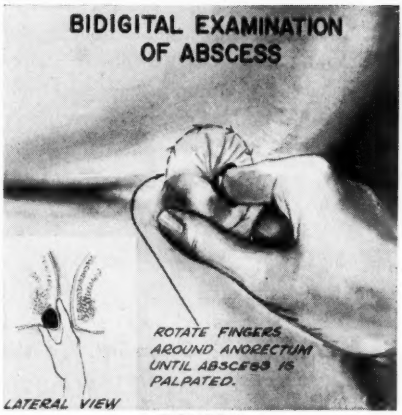


FIGURE 2

Diagnosis: The diagnosis is based upon swelling and redness over one or both ischiorectal fossae. Upon palpation, fluctuation is demonstrated. Aspiration will reveal pus. There is an evening temperature and increased white count.

Treatment: See "General Treatment Principles."

Supralevator Abscess

Submucous (Interstitial or Mural)

This abscess occurs in the submucosa between the mucosa and the muscular coats. It is usually found in the lower three inches of the rectal wall above the pectinate line and at any point in the circumference of the rectum.

Symptoms: The patient may complain of a constant dull ache and feeling of weight in the rectum. Bowel movements tend to increase this discomfort when the abscess is far advanced and irritability of the levators is present. Associated with these localized symptoms, are constitutional manifestations such as fever, headache, increased white count and languor.

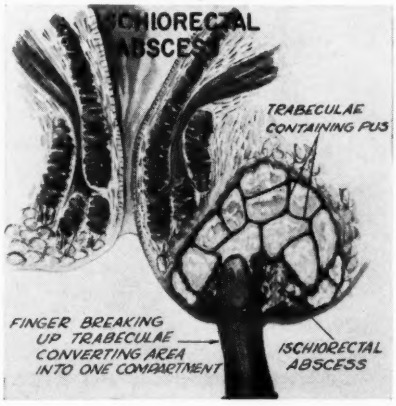
Diagnosis: The lubricated finger inserted into the rectum detects an oval bulging in the rectal wall which is either firm or boggy and very tender.

Treatment: The mucosa over the abscess must be divided the full length of the abscess. The anal canal is dilated, the abscess is exposed, a groove director is inserted to the upper end of the cavity, and the overlying tissues are divided with a knife. The cavity is packed with iodoform gauze, which is left in place one or two days. This is followed by daily hot enemas, consisting of 5 drops of tincture of iodine to one pint of water. Hot sitz baths twice a day and other general treatment as previously advised.

Superior Pelvirectal (Perirectal Abscesses)

These abscesses are rather rare and present much greater problems than the previous types. They develop in the loose cellular tissue occupying the peri-

FIGURE 3


ISCHIORECTAL ABSCESS
TRABECULAE CONTAINING PUS
FINGER BREAKING UP TRABECULAE CONVERTING AREA INTO ONE COMPARTMENT
ISCHIORECTAL ABSCESS

Figures 2 and 3 from "Essentials of Clinical Proctology," Third Edition by Manuel G. Spiesman and Louis Malow, M.D. by permission of Grune & Stratton, Inc., publisher.

rectal space between the peritoneum and the levator and below.

Etiology: This condition usually follows injury to the rectal wall by a foreign body; it may be secondary to a rectal stricture, or it may be the result of extension from an infection of the prostate, urethra, seminal vescicles; it may arise from the broad ligaments, or Bartholin glands in the female; or it may be caused by extension of infection in a postoperative wound in a patient with lowered resistance or in one having a highly virulent bacteria.

Pathology (Acute): This type of abscess usually burrows upward beneath the peritoneum and sometimes ruptures into the peritoneal cavity; or it may rupture into the bladder or urethra; or it may burrow up to the posterior abdominal wall around the kidney, causing a perinephritic abscess; or it may fill the space between the peritoneum and the posterior wall of the entire abdominal cavity; or it may rupture into the rectum.

Symptoms: The patient may complain of a bearing down, weighty pressure sensation in the rectum, urgency, and sometimes frequency of bowel movement. Other symptoms, such as a sudden onset of chills and urinary retention may occur. There is an accompanying leukocytosis. Pain may be present over the sacrum, deep in the pelvis, around the kidney or even in the chest if the pus reaches the diaphragm. We had one case that simulated acute appendicitis and lung abscess without any rectal findings or rectal discomfort. *In the chronic* draining state, there is a persistent, intractable, purulent discharge, which emanates from one or more external openings around the anal verge. In rectal strictures, the complicating superior rectal abscess produces chronic rectal discharge, through one or several rectal openings.

Diagnosis: This condition is diagnosed by palpating a boggy bulging on the lateral rectal wall, or by a sudden onset of chills, pelvic pain, temperature, urinary symptoms, and increased white count, and must be differentiated from

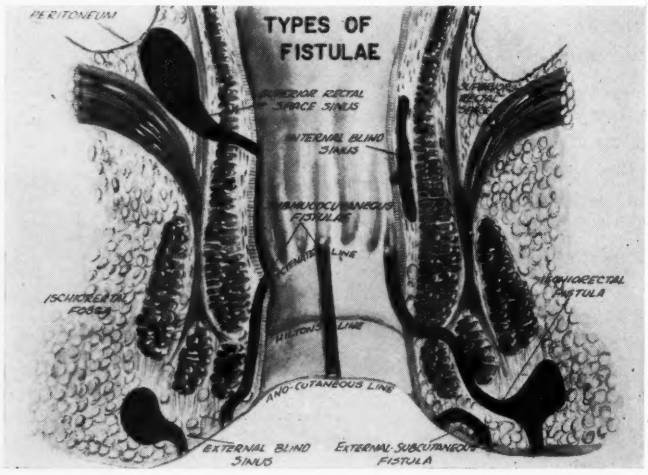


FIGURE 4

a confined prostatic abscess, cystitis, pyelitis and adnexal pathology.

Treatment: Drainage is made through the ischiorectal fossa dividing the fascia above and below the levator ani muscle, as well as the muscle itself. The cavity trabeculae are broken up with the finger, and the area is packed with iodoform gauze. In a female, the abscess may be drained by a posterior colpotomy.

Retrorectal Abscess

Etiology: Among the more important causes we may mention; cryptitis, rectal ulceration, strictures, perforations of the rectum from trauma due to foreign bodies and instrumentation, perianal infections and rectal malignancies.

Symptoms: The onset of this condition may be marked by chills and fever. The patient usually complains of a feeling of fullness and discomfort in the rectum. Accompanying complaints may be those of sacral and sciatic pain.

Diagnosis: Palpation of the posterior rectal wall reveals a boggy, fluctuant swelling.

Treatment: The abscess is approached through the ischiorectal fossa, or through the posterior wall. The rest of the treatment is practically the same as given previously in General Treatment Principles.

Diffuse Inflammations (Cellulitis)

A perianorectal cellulitis should be treated with general and local measures. General measures are the use of penicillin or combiotics, the sulfonamides, the administration of fluids (orally or intravenously), and by adequate nutrition. When diabetes is present, diet and insulin must be carefully watched. Locally, we use hot compresses, sitz baths, drainage when indicated, and x-ray therapy.

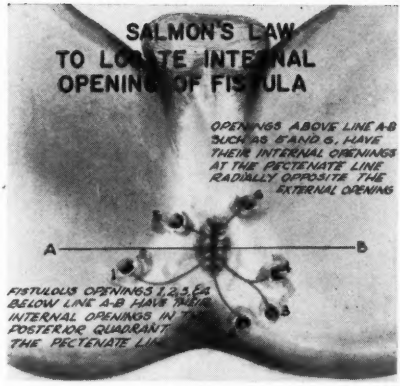


FIGURE 5

ANORECTAL FISTULAS

Definition: An anorectal fistula is the suppurating, tubular, contracted remains of an abscess.

Classification: A complete fistula has two openings and connects the mucous membrane of the anus or rectum with the skin around the anal outlet. There are two main types: Submucocutaneous, which is usually the sequela of a marginal or submucocutaneous abscess; and Ischiorectal, which follows an ischiorectal abscess (Fig. 4).

Incomplete fistula, also known as internal blind fistula, has only one opening and should correctly be called a blind sinus. There are two types: Blind external fistula or "sinus" with the opening in the perianal skin; and Blind internal fistula or "sinus" with the opening in the anorectum. Multiple fistulas have many external openings and occasionally more than one internal opening. This type is usually of the ischiorectal variety and is commonly known as the *watering pot fistula.*

Horseshoe fistula is just a special type of complete fistula which partially surrounds the rectum, crossing from one

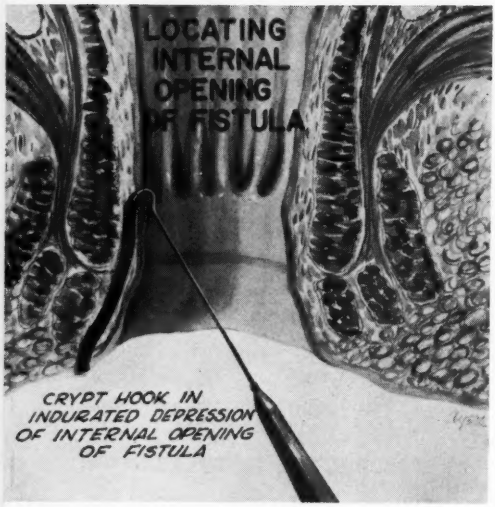


FIGURE 6

side to the other. There are two types: Anterior horseshoe and Posterior horseshoe.

Pathogenesis: Because of trauma from hard particles found in the stool, such as seeds, fish bones, skin and rough vegetable fibers, a crypt is formed. Infection follows, resulting in a cryptitis, which in turn produces a papillitis and a fibrous connective band (pectenosis). If the opening of the crypt becomes occluded by fecaliths, seeds, or a contraction of the anal canal by pectenosis, the pus is retained and an abscess follows: The abscess either burrows to the outside and breaks open, or is incised by the surgeon, forming a complete fistula in either case.

If the pressure of the abscess forces the opening of the crypt and empties its purulent contents into the rectum, the result will be an incomplete or blind fistula or sinus.

Stages: The symptoms should be divided into two stages. *First,* there is the discharging fistula stage, which presents a chronic discharge, sometimes associated with pain of short duration accompanying bowel movements. There may be a simple type of pruritus ani due to the fistulous discharge.

The second stage or abscess, present an interval non-discharging period in which constant pain occurs, which gradually becomes worse. Associated with this is swelling, which is due to closure of the openings of the fistula and the re-formation of an abscess.

Diagnosis: In the diagnosis of a fistula the important factor is to locate the internal opening. This can usually be determined with the aid of the following procedures.

The first aid is Salmon's Law. (Fig. 5) which is accurate in about 95% of fistulas and states: "When the external opening of a fistula is within 2 inches of the anal opening and anterior to a transverse line bisecting the anus, the internal opening is at the pectinate line radially opposite the external opening. If, on the other hand, the external opening is posterior to this line, the internal opening is in the posterior commissure at the pectinate line."

The second aid is the fact that the majority of fistulas have their internal opening in a crypt at the pectinate line or slightly below this line at the base of a fissure (Fig. 6). Only very rarely are secondary openings found above the pectinate line. Also, the internal opening can be felt as an *indurated depression.*

A third aid is the usual presence of an indurated tract which can be felt and followed under the skin, running from the external opening toward the internal opening. This helps to locate the position of the internal opening.

A fourth aid is the injection of a mixture of methylene blue, one part, and hydrogen peroxide, two parts, into the external opening, with a broken-off needle, Gauge 18. This is preceded by the insertion into the anorectum of a piece of rolled gauze. The methylene blue will stain the gauze at the location of the internal opening.

A fifth aid is the use of a silver probe and the index finger. With the left index finger placed internally on the apparent indurated depression of the internal opening at the pectinate line, the probe in the right hand is fed from the external opening towards the finger. By continuous trying, the probe finally passes to the tip of the finger and into the rectum. The probe is then bent and brought to the exterior. A hemostat is placed on both ends of the probe which aids in the incision of the tract that follows.

Treatment: I have used the incision method in the majority of cases. The indurated bottom of the tract left in place, aids in keeping the sphincter muscles from unnecessary undue separation, and aids in a more rapid healing.

Incision: The tract running from the internal to the external opening is laid open wide over a groove director or probe. All collateral branches are opened. The sides of the open tract are trimmed off, converting a tunnel into a shallow trough. The remaining tract is *curetted* and cauterized with 95% phenol or fuming nitric acid.

Excision: In this method a probe is placed in the tract and the entire fistula intact is excised with the probe. No sutures are taken. This method is not recommended for the inexperienced. It is satisfactory only in selected cases and in experienced hands.

Excision With Suture: This method is seldom used because of the difficulty in obtaining primary union in an area of infection, and the results are usually unsatisfactory. This method is mentioned only to be condemned. Never sew up a fistulous tract. Permit the wound to heal from the bottom up.

Cutting The Sphincters: Many methods and angles have been suggested

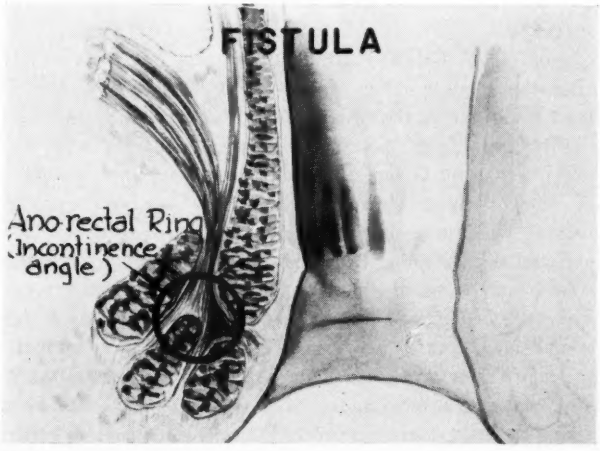


FIGURE 7

The ano rectal ring is a fibromuscular band composed of the Junction of (1) the internal sphincter, (2) the longitudinal muscle, (3) the puborectalis portion of the levator ani, and (4) the profundus portion of the external sphincter. Cutting this ring produces incontinence.

by authors for cutting the external sphincter. Recent consensus of opinion among proctologists, based on a better understanding of the sphincter muscles, is that the subcutaneous portion of the external sphincter which is most commonly involved in fistulas, can be cut at any angle and at any point. The anorectal ring, or critical angle to be avoided in cutting sphincters during fistula operations includes the area where the deep portion of the external, the levator ani, and the internal sphincter meet. This situation is only occasionally encountered (Fig. 7).

Two-Stage Method: This method is advisable to prevent incontinence when the fistulous tract involves the critical angle. The tract is incised to the deep portion of the external sphincter over a groove director. A No. 6, white braided silk (seton) tied to a seton probe is placed in the remainder of the tract involving the critical angle, to act as a guide in locating the tract for the second stage. The second stage is done when the tract has healed up to the seton. The seton which includes the critical angle is cut during this stage. While the seton is in place, the incised subcutaneous and superficialis portions of the external sphincter heal and maintain continence, after the seton portion of the fistulus tract is cut during the second stage.

Watering Pot Fistula: As mentioned previously, this is the neglected result of one or more chronic ischiorectal fistulas, which have burrowed along the perianal skin, forming new periodic abscesses and resulting in new openings. This type of fistula, although appearing complicated, is easily eradicated by passing a probe or groove director between any two communicating openings—incising the tract, and then proceed to two more communicating openings, which are treated likewise. Finally, it will be seen that all of the perianal opened tracts lead to one or two internal openings at the pectinate line. These are then incised, forming a continuous tract between the internal and external portions of the fistula. A small bone curette is then used to curette out the pyogenic lining of all of the tracts. Finally, all of the tracts are swabbed with an applicator dipped in fuming nitric acid. Healing takes place in about six to eight weeks. All of the tract should be watched to make certain that they heal from the bottom up.

Elastic Ligature Method: This is an obsolete method rarely used today because of severe constant pain which follows its use.

Palliative Measures: These are practically never successful and should not be used. Bismuth paste, 95% phenol and 7% tincture of iodine have been tried with very discouraging results.

Tuberculous Fistula: This type is treated surgically, much the same as the others and heals satisfactorily. The tract should be swabbed with pure lactic or glacial acetic acid and packed with iodoform gauze.

Packing a Fistula: Fistulas are packed following the incision and excision method, and the packing is allowed to remain in place for 24 to 48 hours. No further packing is necessaryy. Continuous and repeated packing has been responsible for incontinence in numerous cases. After-care must include fingering of the tract every other day to break up all newly formed connective tissue bridges, so that the trough heals from the bottom up.

Causes of Failure: Failure to find the internal opening; suturing the wound

after excision or incision of the fistula; failure to find and open all collateral tracts; continuous packing of the tract; careless or inexperienced postoperative care—all are causes of failure in fistula operations.

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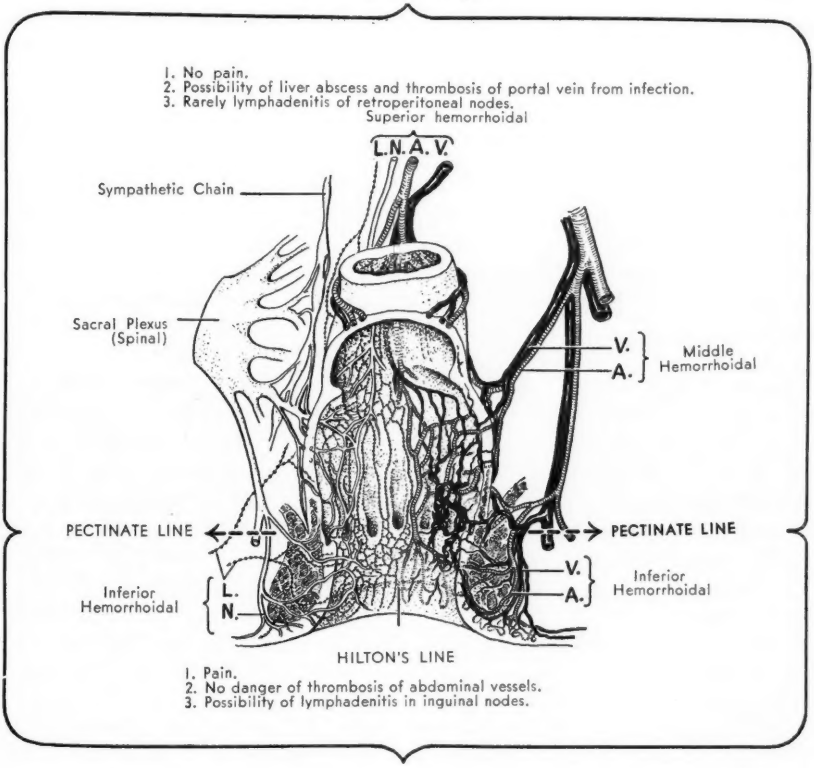
Clini-Clipping

ANATOMY OF THE ANUS AND ANAL CANAL

Ectodermic Origin



JACOB REICHERT, M.D., F.I.A.P.
Phoenix, Arizona

SACRAL DECUBITUS and Proctologic Complications

Plastic and reconstructive surgery may be considered the forerunners of general surgery, yet aesthetic surgery was probably the first known surgical attempt to restore beauty features to those possessing exaggerated artistic sensitivity to the cult of art and beauty.

The average person, regardless of his background and cultural status, is not overwhelmed by the rapport of the doctor-patient relationship, but rather by the surgeon's ability to correct a disfiguring abnormality. Those who are preoperatively assured of satisfactory results naturally refuse to accept attenuate circumstances of unpredicted cosmetic failures. The average person's expectations and knowledge of plastic surgery are "skin deep."

The practice of professing wars, being as old in existence as the everness of the human race, was one of the greatest incentives in promoting reconstructive surgery. The performance of amputations on battlefields was the start of organized surgical aid. Plastic and reconstructive surgery of today includes in its field "the top of the head to the soles of the feet."

Vanity, the vainglory of the human species, has been interested "sine qua non" in displaying the perfectness and beauty of the exposable parts of the body. Fear of disfigurement was the scourge of past generations and interpreted as a divine punishment.

Modern plastic surgery "deals with the repair of defects and malformations, either congenital or acquired." The correction of malformations does not refer only to its aesthetic and symmetric appearance, but equally to its physiologic restoration and resulting comfort. The restoration of skin continuity not only improves the psychological attitude of the individual, but prevents as well, the loss of basic blood constituents with all its deleterious effects.

Over-specialization has an increasing tendency to create subdivisions to a point where a given organ becomes a

Presented by invitation to the International Academy of Proctology Ninth Annual Teaching Seminar, New York, N. Y., May 1, 1957.

target for numerous specialties. "From every standpoint, I believe that better results can be obtained by having plastic surgery a subdivision of general surgery."

Plastic and reconstructive surgery, notwithstanding its great progress and the place it occupies in our modern civilization, is still a "happy hunting ground of the charlatan and quack."

Generally speaking, the surgeon and the layman have a common objective—best cosmetic results. However, the layman's ambition is the urge for perfectness, while the surgeon's point of view is rehabilitation and the desire to demonstrate professional ability.

There are many other views such as those expressed by John Staige Davis in his presidential address before the 53rd Annual Convention of the Southern Surgical Association, held in Hot Springs, Va., December 11, 1940, when he stated, "Strange as it may seem, even in 1940, when plastic surgery is spoken of, I venture to say that the majority of the medical profession immediately think of its aesthetic aspects only and entirely forget the major reconstruction work by which human wrecks are restored to usefulness, both physically and mentally, and are enabled again to earn a living."

Before entering the main topic of this paper, it may be of interest to add additional facts concerning the history of plastic surgery.

The face always plays the most important part in reflecting our emotions when communicating with others. The more perfect the face, the more success is expected. The effectiveness of an attractive face has been recognized since creation and up to date this elected part of the body receives the greatest care. Logically, disfigurement is still the cause of deep concern; any abnormality affecting the facial physionomy is an important factor in encouraging reconstructive surgical research.

Ancient Egyptians, Hindoos and Etruscans of past civilizations knew the basic principles of plastic surgery. Innumerable papyrii reveal their surgical procedures. Plastic surgery was known and practiced as long ago as 5000 to 6000 B.C.

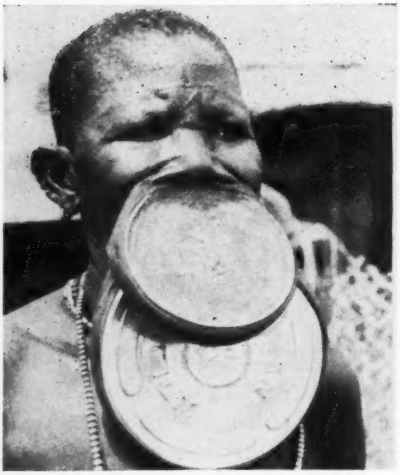
In certain regions of the Dark Continent of Africa, the age old practice of elongation of lips, breasts, vaginal labia and ear lobes has been performed since remote times. The adoption and continuance of such practices required the intimate knowledge of tissue physiology.

There is no documentary evidence of medical knowledge from the African Continent but the above described practices indicate that the basic principles of medicine and surgery were known to the natives since time immemorial.

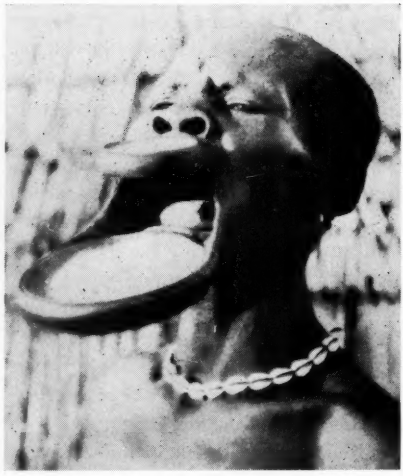
It is quite probable that the Middle East, the gateway of Asia and Africa, was in a preferred strategic position to acquire the greatest medical knowledge.

In contrast to the ancient Hebrews, whose way of life is recorded as narrated in the Old Testament, the Egyptians did not pass their medical knowledge to others. The only reference of human history since its creation is recorded in the Bible.

The legendary story of Adam and Eve as cited in the Bible, Genesis 2:21-22: "And the Lord God caused a deep sleep to fall on Adam, and he slept; and he took one of his ribs, and closed up the flesh instead thereof and the rib, which the Lord God had taken from man, made he a woman, and brought her unto the man," reveals the possibility



"Suppose her husband had to buy her lipsticks?"



"She devoted her life to beautifying herself"

Figure 1. The size of these distended lips containing metal or wooden disks demonstrates the potentials of elasticity of these organs.

that Adam and Eve were conjoined twins with the attachment at the lateral wall of the chest. The removal of the rib, which symbolizes the creation of Eve, may give us the story of the first performed rib resection.

India, the cradle of humanity, is one of the oldest surviving civilizations where traditions, customs, and way of life are genuinely preserved. The art of surgery was cultivated by them for ages and their training and ability exceeded any other country of their times. The Hindoos were highly skilled in reconstructive surgery and their basic principles of skin shifting are still used today. The first known description of rhinoplasty was recorded by Sushruta, father of Hindoo surgery, about 800 B.C.

The Conflicts of Medicine and Surgery The downfall of Hindoo surgery began with the conflicts for supremacy in the field of medicine and surgery. Buddha and his teachings from 552 to 482 B.C. greatly contributed to the art of clinical medicine but suppressed experimental surgery on animals. Surgery was considered a polluting art and practiced only by castes who were considered unclean. However, until the 17th century, in spite of the influence of Buddhism and its inhibiting effect on surgery, continuous efforts were made by Hippocrates, Aristotle, Aurelius Cornelius Celsus and Cladius Galen to amalgamate the arts of medicine and surgery as an interlocking, indivisible science.

The school of Hippocrates opposed separation of medicine and surgery as independent fields considering both an integral unit. Galen, however, did not consider surgery as a separate field but claimed that "surgery is only a mode of treatment." Andreas Vesalius and Leonardo da Vinci did not follow Galen's theories.

The fight for supremacy between

medicine and surgery went on for centuries, each accusing the other of belonging to an "inferior caste" when applying the art of surgery, or professing "charlatanism" if recurring to medicine alone.

The teachings of Hippocrates were established in Italy and France about the Middle Ages.

The raging of bitter controversies through the ages made the infiltration of undesirable elements possible both in medicine and surgery, at the expense of public health and to the disadvantage and detriment of the profession.

Up to the present time, regardless of the acceptance of the Hippocratic concept, the conflicts and struggles for supremacy in the various fields of medicine and surgery persist.

Even though at the present time such conflicts are officially condemned by the profession as a whole, there is a silent glorification and granted favoritism to those who follow a particular medical or surgical subdivision. This sublimation is sustained and cultivated by a fraternal-like self-appointed privileged caste.

The effects of medical bickering through the centuries now tries to find its outlet in creating the appearance of a complex monster-like super-specialization. The present set-up's differences of opinion are based upon auto-glorification of conditioned-advertised superior knowledge, rather than to the actual possession of professional qualifications.

From a practical standpoint it can be said that the trend of creating innumerable subdivisions in both medicine and surgery is detrimental to the progress and philosophy of medical thinking.

The present faulty hospital administration policies are a contributing factor in aiding the cause of deterioration of genuine medical practices.

The family physician of today finds himself in a peculiar position of being unjustly and morally subjected to an exaggerated referral system in order to be tolerated and fit in with the present hospital policies. Similar methods were used in the 9th and 10th centuries when Avicenna, the famous Arabian physician, considered the general surgeon to be "an inferior being of a low degree, make-up, and ignorant." However, notwithstanding his ideologies, Avicenna greatly appreciated referrals from these "inferior beings."

Religion and Medicine Pope Innocent III about 300 years later, declared in a special order that "No priest, deacon or sub-deacon, should perform any surgical procedures which involve blood-shed" as it was "incompatible with the divine mission." This Papal Proclamation was based on religious principles in an epoch of great reforms. As a result, surgery was turned over to "barbers, bath keepers, executioners, mountebanks, sowgelders, and others of low degree" much as was professed in India hundreds of years before.

The influence of religion left its imprints on medicine from the 5th to the 13th century. Until the 9th century, monasteries were the main centers of medical assistance; however, from then to the 13th century the art of healing was under the influence of the combined efforts of various religions.

At the time of the Inquisition, the exodus of innumerable famous physicians from Europe, such as Maimonides and others, elevated the standard of medical knowledge in Asia Minor, and the schools of Arabia became the greatest teaching centers.

The History of Inshifting Pedicle Flaps in Plastic Surgery So far as the history of plastic surgery in relation to our subject is concerned, it is noteworthy to mention a method of shifting flaps which has "been practiced from time immemorial in India by members of the tilemakers caste." The method consisted of pedicle flaps taken from nearby adjacent tissue, as from the forehead to the nose. This procedure was brought to the attention of European surgeons in the 18th century. However, a similar operation was performed for the first time in Italy in 1597 by Gaspari Tagliacozzi, Professor of Surgery in Bologna. This operation was described by him in a scholarly paper.

The operation performed by Tagliacozzi was a rhinoplasty, making use of a pedicle flap from the arm. The described method is also named the "Italian Method," which consists of using the pedicle flap from distant parts of the body such as the arm, leg, or from any other area. Tagliacozzi, in describing his method "makes no mention of anyone having previously performed a similar operation."

In 1814 the first successful rhinoplasty by the Indian Method was performed in England by Joseph C. Carpus. The same technique was introduced in Germany in 1816 by Diessenbach, in France in 1826 by Lisfranc, and in the United States in 1834 by J. M. Warren. Since the latter date the Indian Method has been performed innumerable times and by many surgeons the world over.

Psychological Problems and Plastic Surgery Reconstructive surgery "as a science and as an art cannot afford to ignore the psychiatric and psychological problems which are associated with congenital and acquired deformities." However, reparative surgery is mostly concerned with the lesion itself and secondly with the "feelings and complexities of the patient."

A congenital or an acquired physical deformity causes great concern and anxiety to the afflicted and corrective surgery is highly justified under such circumstances. Plastic surgery, in correcting the above deformities is classified as "aesthetic surgery."

Chronic exposure to extensive lesions located on the trunk for prolonged periods of time also leaves deep marks of depression and anxiety which do not cease with the accomplished repair. The attention given to the above described invalidism should consist of simultaneous psychiatric and surgical treatment.

The underlying reasons for anxiety and depression in those afflicted with extensive lesions for prolonged periods of time are attributed also to metabolic changes which take place in the entire organism with resulting biochemical repercussions in the central nervous system. These changes occur from a continuous chronic depletion of vital substances creating a nitrogen and electrolyte imbalance with all its deleterious implications. Under such circumstances reparative surgery is not only justified but a "must" to prevent further depletion and fatal outcome.

The Problem of Paraplegia and Its Steady Increase Modern warfare, as a result of our present civilization, and the fantastic increase of the motor vehicle industry contributing to fast transportation, especially in the United States, is greatly responsible for the number of paraplegics.

Since 1914, the number of military casualties with paraplegia has increased.

The main increase took place during World War II and the Korean conflict.

Mass bombardments of the last war were responsible for a great number of spinal cord injuries among the civilian population. The number of existing paraplegics is now believed to be around 25,000 or more.

Modern Equipment for Paraplegics The supervision of bedridden patients with decubitus ulcers is a serious economic drain to a public institution; special trained personnel is often required. The average expense of a paraplegic, including medical supervision may amount to $15,000-$20,000 yearly. It is easy to realize the financial burden carried by an industrial compensation institution as the number of paraplegics increases.

The average hospital is not equipped nor does it have the trained personnel for prolonged care of the paraplegic. These facts are recognized by the attending physician rather than by a particular specialty. The establishment of a paraplegic section in every hospital, aided by trained personnel and equipped with proper furniture would certainly contribute to the welfare of these patients.

The Stryker Turning Device The required changing of position of paraplegics can be facilitated by the Stryker device.

This apparatus consists of two Bradford frames, one anterior and the other posterior, which are connected by turning devices clamped on the end of the bed. A portable frame with the turning device supported by a base which rests on the bed or on casters, is also available. The frames are made of lightweight tubing covered with heavy canvas and properly padded. For the standard hospital bed, they are 6′3″ long, and for the portable unit they are 6′1″ long. A 6″ opening at the center allows toilet service. Attachments are provided for the support of the feet at right angles and for the arms at the sides of the frame.

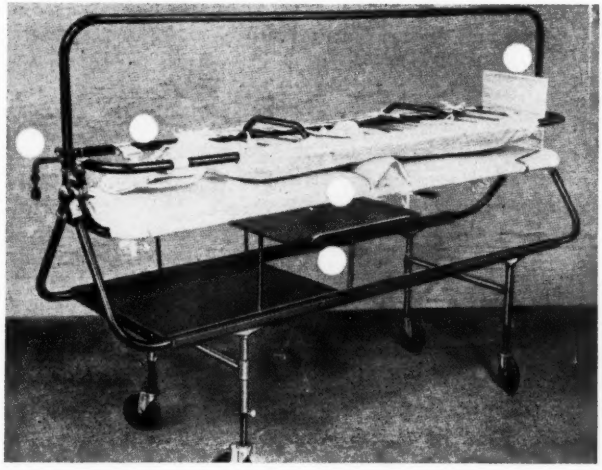


Figure 2. The Stryker Turning Device

The patient is placed on his back on the posterior frame, each end of which is attached to the turning device. The anterior frame is placed over the patient securely anchored to the posterior frame and locked in this position. A spring lock at the end is then released, allowing the frames to revolve through an angle of 180°; at this point, the frames automatically lock, leaving the patient face downward on the anterior frame. In like manner, the patient may be turned again from this position to the posterior frame.

Proposed Modifications of the Stryker Turning Device The Bradford frames on which the paraplegic is placed are covered with heavy canvas and standard padding; however, to provide a relatively equalized pressure to the entire resting surface of the body, it is recommended that mattresses of water, air, or foam rubber be used.

The easy manner in which the paraplegic may be turned from one surface to another when "sandwiched" between the Bradford frames (securely locked) makes the Stryker Turning Device an indispensable instrument.

The original Stryker Turning Device is prepared for the anterior and posterior bodily surfaces only. A modification of the present device is proposed by the writer as follows: *Two additional metal frames following the present Bradford pattern, properly covered and padded, are to be added to the present structure. These frames are to be connected laterally to the existing turning device.* The increase of two additional resting surfaces will shorten the exerting pressure period usually required by the original device.

Another useful modification is *the addition of an electric elevator system to be operated by the paraplegic. The Bradford frames are to be prepared in a manner that each end can be elevated separately with a locking device in the center of each.* The benefits obtained from elevating or lowering only half of the Bradford frame is the assumed comfortable position which can be obtained during mealtimes or reading hours. The lowering of the caudal part of the frame will facilitate urinary drainage.

A sliding table to fit over the device will accommodate the paraplegic's personal objects and facilitates shaving and other bodily services. Such functions can be easily learned and aid in rehabilitation.

Social Responsibility to Paraplegia Any improvement that can assist the unfortunate helpless paraplegic is highly recommended and is a moral duty of every one of us who has been spared from this crippling invalidism. The entire human race bears the guilt of having indirectly contributed to the increase of paraplegia. Modern warfare of the atomic age has the seeds of a fearful future in further increasing the present number of casualties.

It is time to organize the entire medical profession on an international scale under the guidance of the World Medical Association to attempt to decrease the incidence of paraplegia. The World Medical Association is the proper institution qualified to undertake such a great project as it has already contributed so much to improve the standard of health in underdeveloped countries.

In the last two decades great emphasis and research has been dedicated to combat infections of bacterial and virus origin. Gratifying results were obtained through the discovery of antibiotics and anti-virus vaccines. The

atomic by-products, still in the initial experimental phase already reveal some encouragement in the treatment of basic metabolic diseases.

If one considers the number of paraplegics due to spinal cord injuries that occur every year, in relation to other crippling disabilities of infectious origin, it is to be realized that the casualties from cord injuries is proportionally higher.

The irony of our times reflects the public apathy to vital problems not highly dramatized.

The incidence of measles and its mortality rate is higher than in polio, yet no great concern has been demonstrated by public officials due to the lack of dramatization.

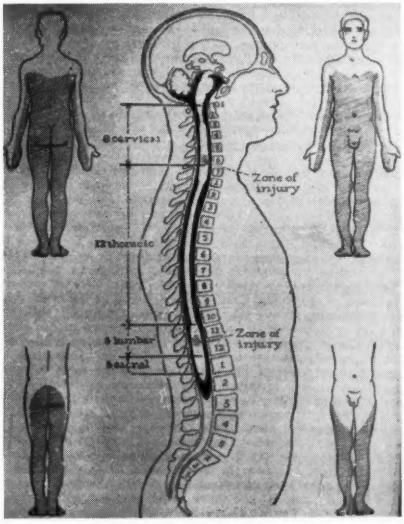


Figure 3—This illustration shows the relation of the spinal segment to the vertebral column and estimation of the degree and extent of an injury to the spinal cord. Estimation of the level at which the cord has been injured is based on the neurological findings. Acknowledgement is made to Frederick Christopher, M.D., "Textbook of Surgery", W. B. Saunders Company and Homans "Textbook of Surgery", Charles Thomas Publisher.

Can a Severed Spinal Cord be Repaired? Rehabilitation of the paraplegic is still a great problem and the obtained results are temporary and of short duration. The future solution of solving the problem of paraplegia is to be found in further research rather than in improved nursing care. Medical attention and nursing care is a poor substitute for investigative attempts to restore the functions of a severed cord.

The great number of paraplegics and their steady increase warrants exhaustive studies of experimental surgery *not to be under the exclusive supervision of over-specialized neurosurgical personnel.*

To abandon paraplegics at the actual rate under the supervision of a self-appointed selected minority will certainly not contribute to further progress.

No *revolutionary changes* are to be expected from technical improvements. Technical improvement contradicts and interferes with *investigative medical progress.* Highly trained practical attendants will certainly accomplish, physically and technically, more than highly trained physicians who are conformists.

The participation of the entire medical profession in the supervision of paraplegics will definitely encourage investigative studies and finding new avenues in the field of reconstructive surgery of the nervous system.

The present rehabilitation program of paraplegics in perfecting methods to make their existence more comfortable, is a great fallacy.

Is the Medical Profession Fulfilling Its Purpose? The efforts of the medical profession in preventing diseases through the discovery of new

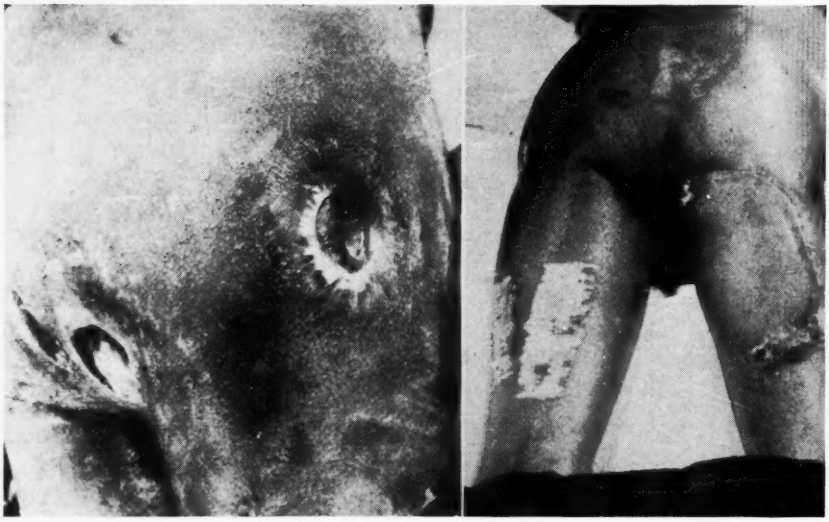


Figure 4A Large deep ischial and trochanteric ulcers—the possibility of fecal contamination of decubitus ulcers in a paraplegic is evident.

remedies is the most noble culmination of human aspirations.

Medical schools seek to attract students dedicated to the advancement and progress of medical sciences. However, the present education limits investigative activity of the graduate.

The teachings at the bedside of the patient, which is the fundamental practical accomplishment in order to comprehend theoretical knowledge, reduces itself at the present time to the alleviation of painful disabling syndromes directed mainly for the purpose of rehabilitation. This attitude, "per se" may seem to express some advance in our social relations, yet the primary objective of medical analysis is overlooked.

In the past, a graduate was imbued with basic teachings and theories, and his efforts were dedicated to problems pertaining to clinical observation. At the present, however, greatest efforts are directed to mechanics.

Research and animal experimentation is left to a limited number of institutions of higher learning. The majority of so-called "medical research centers" are associated with, or a direct outlet of, pharmacological industries whose sole interest is the discovery of a "miracle" drug. The content of many of these unusual drugs are of no pharmacological significance.

The greatest medical discoveries were made at the bedside of the patient. Every physician, regardless of the amount of ingenuity and technical ability was a one-man research institute. The past pioneering spirit is now replaced by impressive machinery displayed in elegant medical premises. Very frequently medical offices give the impression of a "shooting gallery."

At the present time the ability of a practitioner is evaluated in relation to the number of patients that visit his premises, has ability in administering

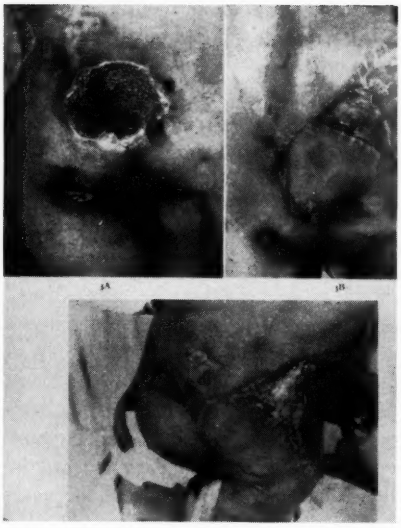


Figure 4B—Large sacral ulcer (A) in a thin quadriplegic. It was treated by excision of the ulcer and underlying bone, and a large rotation flap (B). Following trauma, after the patient left the hospital, a recurrent ulcer was closed by secondary rotation of the same flap. Note the two healed split skin grafts at a distance, one from each operation. A subsequent recurrence was treated by rotation of a flap from the opposite side. Reproductions through the courtesy of Herbert Conway, M.D. and B. Herold Griffith, M.D. "Decubitus Ulcers in Patients with Paraplegia", in American Journal of Surgery, Vol. 91, pages 955 and 962, January to June, 1956.

painless injections, and the attractive salesmanship he possesses. Those remaining physicians who follow the postulates of medicine, dedicating their maximum talents and ability to the etiology of the diseases, not only are a rarity but are not even appreciated. The present tragic course encourages a flourishing industry of pills and injectibles and pharmacological rationality is substituted by impressive pictorial emptiness.

Etiology of Decubitus Ulcers

The history of plastic surgery and its progress, including the trend of modern medicine, described at the beginning of this paper was intended to stimulate interest in the approach to the problem of decubitus ulcers.

The most affected parts of the body susceptible to decubitus ulcers are the areas over bony prominences, such as the sacral, ischial, and trochanteric areas. These parts of the body when exposed to prolonged localized pressure often develop ulcers. Chronic wasting diseases, and especially paraplegics, are the candidates "par excellence" to develop decubiti sooner or later, regardless of the amount of nursing care. Well planned nursing care may postpone pressure sores for some time, however, as general deterioration progresses hardly ever can ulcers be prevented.

There are innumerable types of ulcers, however, for our particular discussion only six types will be mentioned: Varicose, trophic, diabetic, syphilitic, decubitus and mycotic ulcers.

The cause of ulcers are of different origin, as the name may indicate, however, the classification does not often reveal the main etiologic or pathologic factor itself.

Mostly the intimate mechanism in establishing a local necrosis follows a common pattern regardless of its etiology. The virulence and impact of the etiologic factor on living tissue establishes the status of acute or chronic reaction. Furthermore, and frequently so, many factors may be directly or indirectly responsible for the production of an ulcer; usually, however, there is a combination of two or more essential factors working in close association. Neurotrophic changes associated with pressure are predisposing conditions causing deep indolent pressure sores. "Trauma and infection are the most fre-

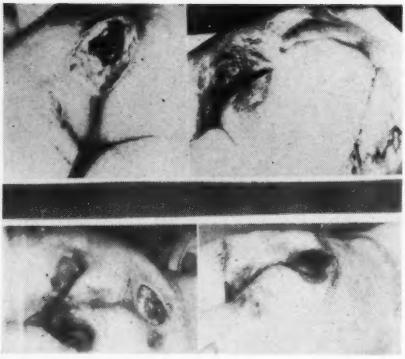


Figure 5—(1) Sacral and ischial ulcers, (2) Closure of sacral ulcer with bilateral flaps. Primary repair of the ischial wound after removal of the ulcer and tuberosity. (3) Sacral and ischial ulcers, (4) Excision of ischial ulcers and tuberosities with primary repair. Delayed sacral flaps. This illustration was obtained through the courtesy of William Meloy, M.D. and Robert Harding, M.D. from an article "Reconstructive Surgery in Paraplegia", American Journal of Surgery, July 1956, Vol. 92, No. 1, page 99.

quent exciting factors in the production of ulcers."

Chronic ulcers are usually contaminated by bacteria, fungi, or protozoa originating from body fluids combined with the flora of the particular environment. With the continuation of trauma the process of destruction and ulceration increases. Great structural changes take place in the deeper strata, forming avascular sclerosis which does not respond favorably to treatment nor to spontaneous healing. A similar pathological process is found in chronic ulcers of the gastrointestinal tract.

Very frequently a pathological lesion known as "fissure in ano" when carefully examined, reveals a typical picture of a chronic ulcer with its underlying progressive fibrosis. This condition is often called "pectenosis" and reflects the end result of continuous trauma, infection and progressive sclerosis. The macroscopic appearance of an anal ulcer is often misleading and the observer does not identify it as a typical ulcer. Any lesion which comes under our observation is to be pathologically interpreted. Only by proper identification and diagnosis will we be able to extend treatment with success. "An ulcer should never be grafted until its nature has been determined, whenever this is possible; otherwise, one is instituting treatment before having made a diagnosis."

Ulcers of transverse myelitic origin in paraplegics, are the result of neurotrophic changes and the loss of neurovascular reflexes, secondary to cord injury. The neuro-vasorum and the vasonervorum which usually provide the proper defensive reflexes are completely paralyzed. Tissue physiology in paraplegics is conspicuously reduced and tends to assume proper proportion to its requirements. The loss of functional purpose of paralyzed tissue as it occurs in paraplegia, follows a progressive involution. According to Pick, "The closure of decubital ulcers by the inshifting of collateral tissues, in the form of French flaps, is usually adequate in orthopedic conditions but fails to subserve the needs of a patient suffering with transverse myelitis."

Studies made by Donald Munro affirm that "It may safely be said under normal conditions that adequate supply of blood to the skin depends upon the integrity of two reflex actions which must include, at least, the spinal cord. Failure of the reflex control of the cutaneous circulation when added to the local changes that have produced or will produce a pressure sore, causes a bedsore to develop on this site." Further observations made by the same author:

"Based on our knowledge of the deleterious effects of spinal shock on all reflex activity below the level of any spinal cord injury, its presence immediately after the injury and its characteristic continuation or recurrence whenever exhaustion or sepsis develops. I have assumed that the difference between the ordinary pressure and the bedsore associated in any injury to the spinal cord exists because of the influence of spinal shock on the peripheral vasomotor reflexes."

Great Contributions in the Fundamental Understanding of Decubital Ulcers Real contributions to the problem of decubitus ulcers and its treatment have been made in the last decade mainly by the Veterans Administration. The present essential knowledge in the field of pressure sores is attributed to the research of the VA hospitals.

The number of paraplegics resulting from war casualties made the VA hospitals the "number one research institute." The span of life and survival rate of paraplegics under the supervision of the VA hospitals are undoubtedly prolonged. On the other hand, the same category of patients under private care, regardless of the surgeon's ability, have a poor outlook.

The survival rate and prevention of complications in paraplegia is basically a financial problem; all those with spinal cord injuries taken care of by Workman's Compensation Law or Uncle Sam will obtain constant medical attention regardless of their financial status. The war veteran, apart from the financial security provided by our government, has the moral advantage to be looked upon and treated with respectful attention, which helps his morale.

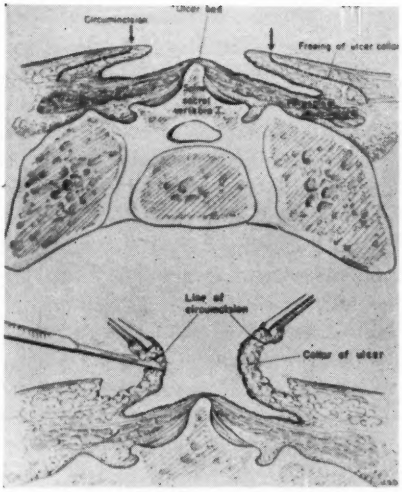


Figure 6—Pick's method of "incorporate" repair of decubital ulcers. Acknowledgement is made to John F. Pick, M.D. and J. B. Lippincott, Publisher for illustrations in figure 6 and 7 which appeared in "Surgery of Repair", Vol. 2, 1949, Page 576-577 showing the author's method of surgical correction of "incorporate" repair.

Methods of Repair of Decubital Ulcers In an excellent communication read before the American Surgical Association in Colorado Springs in 1950, Bradford Cannon, in describing the approach to the treatment of decubitus ulcers, discusses in a scholarly way, the entire problem of pressure sores. However, the radical excision of all bony prominences, as advised by the author, is not commonly shared by others. The same technique in solving the problem of decubiti is sustained by Blocksma, Kostrubala, and Greely. The use and introduction of this radical method of excision is to prevent "the same mechanical pressure that created the original ulcer."

This writer's personal experience has shown that the routine removal of bony prominences in repairing decubital ulcers is not always necessary. Many

authorities in the field of plastic surgery, such as John F. Pick and others, have had the writer's experience and share the same opinion. Those surgeons, including Kostrubala, who resort to radical removal of bony prominences to prevent ulcer recurrence, base their method upon the theory that subcutaneous tissues of shifted pedicles, when laid directly against bare bone, will not subsist normal wear and tear.

Pick, in outlining his method of repair without the removal of bony prominences, provides sufficient protection for the subcutaneous fat by creating an epithelial-lined bursa on the bony prominence which may persist indefinitely and prevent shifted flaps from recurrent breakdown.

The surgical approach to solve the problem of decubitus ulcers may be credited to Scoville. According to Davis, the permanent healing is obtained by "excision and closure or by excision and rotation of a flap."

White, Hudson and Kennard share a similar opinion while Ramon and Alexander recommend linear closure of the repaired site. Conway and his associates recur to the method of "excision and closure by pedicled flaps with free skin grafts at a distance."

The Destruction of Vasomotor Centers in Spinal Cord Injuries

The main etiologic factor of bedsores and the destruction of the vasomotor center of the spinal cord as observed in civil life accidents, are almost identical with those encountered in experimental surgery. A person with a completely severed cord feels like he is "cut in two." The part of the body situated below the transection of the spinal cord has complete loss of sensation and reflexes, especially in the flaccid stage. The rectum, bladder and penis are included in the complete paralysis. There is diminished temperature in the paralytic part as a result of lesser circulation.

Reduced circulation and destruction of the vasomotor center are mainly responsible for the frequent occurrence of

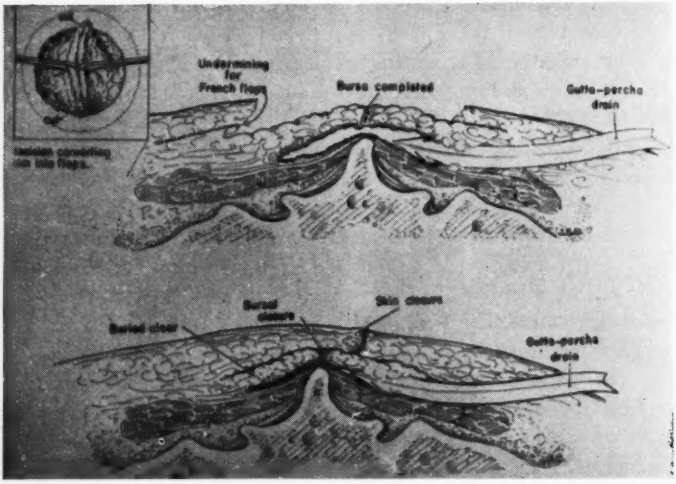


Figure 7 — Pick's completed construction of surgical bursa.

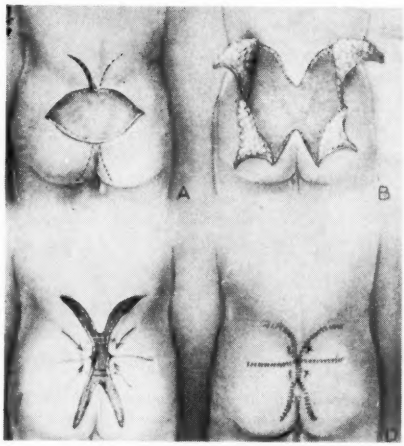


Figure 8—Technic of an operative treatment for decubitus ulcer. Through the courtesy of Thomas G. Orr, M.D. and W. B. Saunders Co. and Croce, Shullinger & Shearer, "Technic of an Operative Treatment for Decubitus Ulcers", Annals of Surgery, Vol. 123, 53, 1946 and J. B. Lippincott Co.

pressure ulcers. Careful attention extended to the paraplegic during the flaccid stage of paralysis may prevent the frequent occurrence of decubitus ulcers.

Factors of prominent importance which may prevent extensive decubiti are: The immediate attention given to prevent malnutrition, loss of electrolytes, and bruising.

Irritation Theory of Muscular Spasm Studies made by Scarff and Pool reveal that muscular spasm in paraplegics is generated at the site of the lesion of the distal cord segment. According to the above authors, the MASS REFLEXES are the result of irritation caused by the formation of scar tissue in the isolated cord. It was demonstrated that the excision of all existing scar tissue usually reduces muscular contractions.

Scarff and Pool's "scar-tissue irritation" theory opens new avenues of investigation. The question now arises: *would an early excision of the injured part of the spinal cord, followed by a primary union, reestablish partial or complete voluntary function?* Experimental animal surgery may have the answer.

The fact remains that a mechanical factor—"scar-tissue irritation"—is able to provoke mass contractions. The resulting muscular tonic contractions reveal that there is sufficient viability to reestablish function if the anatomical integrity of the cord could be restored.

The respectful adherence to conformism is gradually losing its tradition as a result of unbelievable scientific achievements. Reviewing the history of medicine we often find that pioneers and theorizers have dared to attempt the then-impossible; however, with the passage of time the "then-impossible" became a reality.

Muscle Physiology in Paralysis The majority of paraplegics following a cord injury often have a relatively short interval of flaccid paralysis and then assume the spastic phase of reflexes. The tonic stage of paraplegia also affects the abdominal viscera.

During the spastic stage of paraplegia, the slightest physical provocation causes severe spasm of the paralyzed part, aggravating existing pressure sores. Similar phenomena occur along the gastrointestinal tract, resulting in forced ejection of feces and urine; this occurrence, which is quite frequent, not only contaminates the existing ulcers but exposes the entire body, simultaneously, to systemic infections.

It is noteworthy to observe that regardless of the continuation of the spastic paralysis there is minimum

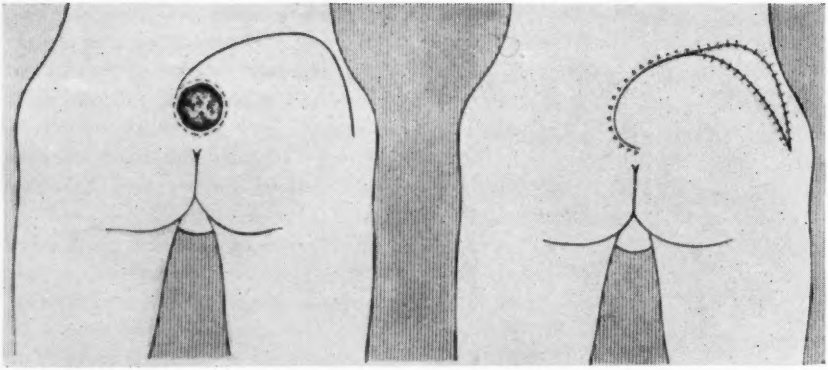


Figure 9—Large deep ischial and trochanteric ulcers. Reproduced through the courtesy of Herbert Conway, M.D. and B. Herold Griffith, M.D. from the article "Decubitus Ulcers in Patients with Paraplegia" in the American Journal of Surgery, Vol. 91, Page 954, January to June 1956.

wasting of the musculature; this is probably due to the prevalent involuntary reflex movements counteracted by the extensor muscle group. The main spastic initiative takes place in the flexors while the inhibiting occurs in the extensor group.

The preservation of muscle integrity in paraplegics is sustained by muscular contractions. The spastic stage of paraplegia may still be the proper time in which the excision of scar tissue and primary union of the cord is possible.

To overcome the spastic phase of paraplegia an anterior rhizotomy is often performed; following this the muscle wasting progresses rapidly. This particular atrophy following rhizotomy confirms the possibility of "reestablishing a partial or complete voluntary function."

Contamination of Decubitus Ulcers

Most pressure sores, especially in paraplegia, are contaminated with a mixed environmental and intestinal flora. The non-predictable intestinal emptying is mostly responsible for this condition.

Paraplegics lay helplessly, regardless of their training and rehabilitation and are unable to control their elimination. The fecal flow cannot be controlled due to the unawareness of its action. The only senses which perceive the presence of matter are the olfactory and acoustic organs; however, the perception coincides with the "fait accompli" and nothing can be prevented.

The upper part of the body is not physically able to handle the dead weight of the paralyzed part. Use of the monkey bar attached to the Stryker Turning Device may be of some help but not sufficient to change position. Some subjects with a strong musculature may, by lifting their body vertically, even spread more contamination.

The opening in the Stryker device for the purpose of defecation may be of some help occasionally but hardly prevents fecal accidents. The fecal consistency of the paraplegic is not uniform at all times, nor is it feasible to try to time its regular appearance. Realizing these circumstances the paraplegic becomes discouraged in his efforts to help

himself and personality changes take place which often degenerate into a depressive apathetic attitude of lingering.

Bacterial Flora of the Intestine Human intestinal matter contains enormous amounts of bacteria. It is estimated that an infinitely small amount of human feces contains billions of bacteria. The intestinal flora of the GI tract varies greatly in its respective sections and depends upon the duration of permanence in the bowel. The number of bacteria increases as it reaches the terminal bowel. The survival of intestinal flora is of short duration once it reaches the external environment.

To a smaller degree, the large bowel harbors a certain number of fungi. Normally, a proper equilibrium exists between bacteria and fungi. Often, however, abnormal conditions completely disorganize this proportion.

The intestinal flora consists mainly of the colon, lactis aerogenes, faecalis alcaligenes and mesentericus groups. To a much lesser degree it is found to contain streptococci, staphylococci and gram positive anaerobes.

The classification and naming of the intestinal organisms is often confusing and not uniform. However, the acceptance of the genetic name "bacterium" is most feasible. Bacterium coli, bacterium aerogenes, and related organisms are usually classified under the name "colon bacilli." Innumerable varieties of bacteria grouped under "colon bacilli" morphologically reveal only minor characteristic-differences; however, greater differentiation is obtained through culture media.

The intestinal flora, under normal conditions, is saprophytic or parasitic in nature.

The human gastric pouch, under normal circumstances is free of bacteria. Particular pathologic circumstances may reveal organisms of the Opler-Boas and sarcinae type, indicating stasis.

The jejunum and intestinum-tenue usually contain a negligible number of bacteria. The main bacterial digestion takes place in the intestinum crassum. The over-population of the different strains in the large bowel are in a continuous state of competition. It is appropriate to quote Rettger who so wisely compared the large intestine of man and lower animals to "a veritable culture tube in which definitive bacterial types appear struggling constantly to gain supremacy."

Reference to the intestinal flora is made with the intention of reminding us of the dangers of contamination to which decubitus ulcers are steadily subjected.

Care of the Urinary Bladder in the Paraplegic The urinary bladder and the uncontrolled micturition in the paraplegic is often a cause of systemic infection, distention, and irritation of the skin. Continuous wetting often causes maceration of the skin and the start of decubitus ulcers.

Regardless of the existing difference of opinion among the specialties as to the urologic approach in paraplegics, there is a prevailing consensus among all, that the care of the bladder is a major problem. Authoritative observers claim that urinary sepsis is responsible for the increase in the mortality rate.

Pressure ulcers often follow urinary sepsis; leakage and maceration is a continuous process and the bacterial urinary content with its imbibition in

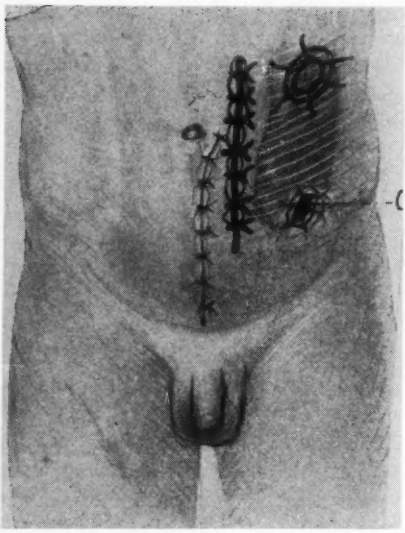


Figure 10—This illustration demonstrates the approximate location to be selected for an artificial anus in the paraplegic.

the rectal area aggravates already existing pathology. Urinary ascending infections are not infrequent and colibacillosis is a common occurrence.

It is the general opinion that a suprapubic cystostomy with tidal drainage is the most useful method to be used in the paraplegic; however, an objective survey of existing treatment discloses that good results do not lay so much in the particular method used, but rather in the proper after-care that such cases require. As far as safety is concerned there is *no safe method for drainage from a paralyzed bladder*. A seemingly poor method may become an asset when coordinated with proper conditioning, hygiene and timing.

Another method favored by urologists and neurosurgeons in Great Britain, with followers in the States, is the manual expression of the urine by suprapubic pressure, in an effort to eliminate the use of an indwelling catheter.

The Formation of an Artificial Anus in Paraplegics The described difficulties of the paraplegic to control defecation may be solved if an adequately placed colostomy is performed. The selection of a proper abdominal area for a colostomy is of paramount importance. The best site for an opening in the abdominal wall depends also on whether the subject is right or left handed, or the occurrence of situs inversus viscerum is present.

If the site of the colostomy is high enough, a thoracic or dorsal flap of nonparalyzed muscles can be shifted, through which the opening can be made. The advantage of using voluntary nonparalyzed tissue around the opening of the artificial anus is the partial re-acquisition of an awareness of sensation which may condition, in part, the process of defecation. The shifting of a pedicle of normal tissue to the abdominal opening does not have to be performed at the time of the colostomy but may be postponed for a later time, depending on the patient's condition or the surgeon's preference.

An artificial anus will enable the paraplegic to take care of himself which can easily be accomplished by special disposable plastic colostomy bags. The feeling of "do-it-yourself" will restore his dignity with a beneficial psychological effect.

The application of a colostomy is frequently considered by the family members and occasionally by the physician as a desperate measure and "the end of the road." A colostomy is often a life-saving device and should be considered as such when the perspective of life depends upon it.

We often see innumerable people who sustained a colostomy and are found to be very happy; often the meaning of their existence becomes purposeful and more significant. However, these sporadic opinions do not reveal the entire inside story of those who found relief and are able to continue life comfortably.

To obtain the patient's consensus for a colostomy depends on the psychological effects of the doctor-patient relationship. The average young surgeon, deprived of the benefits of past experience in general practice, is confronted with insurmountable difficulties; his entire emphasis is based upon the results of mechanical experience obtained from a colostomy. It is quite evident that such impersonal approach is fallible and contributes to the decadence of the medical profession.

Colostomy is often *temporary* or *permanent;* in paraplegia it is usually permanent and performed for the purpose of preventing contamination of decubitus ulcers and "do-it-yourself."

The location of the artificial anus is to be placed midway between the umbilicus and xyphoid process and mesially to the anterior superior spine of the iliac-bone, through a left-muscle splitting, laterally to the abdominal incision.

Under certain circumstances of coexisting pathology in the sigmoid rectoanal region, a second stage operation can be performed with the same technique as used in the abdomino-perineal resection.

Spinal Cord Injuries A great sense of responsibility is required from the physician when called upon to administer first aid to those who have sustained spinal cord injuries.

According to Packard, "all fractures with deformity should be corrected whether cord injury is present or not." Routine fast decisions do more harm than planned attempts. *The so-often senseless advice of applying hyperextension may be disastrous and become irreversible.* In an interesting discussion made by Ruth in 1938, the author expresses the opinion that hyperextension is not a cure of all injuries of the spine. Too-hasty attempts of hyperextension may even force bone fragments into the spinal cord. Hyperextension of a fractured spine should be performed only when all other means are of no avail.

The experience of the writer of this paper can only confirm Ruth's statement —which should serve as a *medical dictum*—and will present a typical case.

In 1951, a 53 year old man came under my attention in Emergency Department and the Memorial Hospital, Phoenix, Arizona. This man had sustained an injury 3 weeks previously. It is noteworthy to mention that the patient walked into the hospital with difficulty but otherwise the gait was spontaneous and voluntary and seemingly painful. His main complaint was of pain in the lower thoracic spine. Before any physical examination was undertaken, x-rays of the entire spine were made and revealed a compression fracture of the 5th dorsal vertebra.

After careful examination a consultation was requested and Barton's hyperextension frame was recommended. Two days following the application of Barton's frame a gradual and progressive loss of voluntary control was noted below the 5th dorsal segment. As soon as this was noted a re-examination revealed the presence of a complete anesthesia from D-5 down to the end of the lower extremities, and there was definite

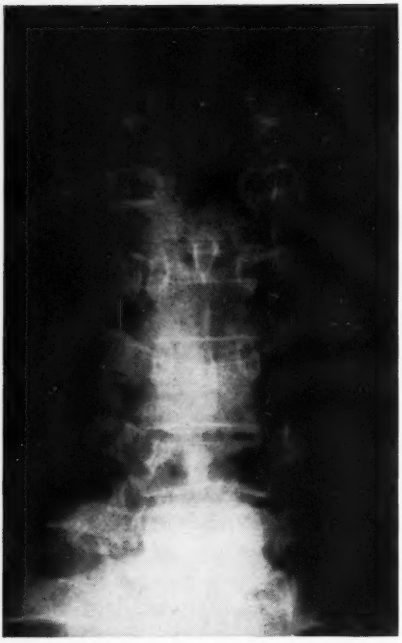


Figure 11—The fractured, compressed vertebra is clearly visible.

evidence of compression to the spinal cord at the described level. An emergency-decompression of the cord was undertaken the same day.

So far as this particular case is concerned, it is the writer's opinion that the application of Barton's frame was the "coup de grace." The hyperextension in this case severed, probably, the main vascular supply to the area by stretching and snapping the spinal cord in a brittling, degenerated fracture.

The Formation of Decubitus Ulcers Under Direct Observation From a clinical pathological standpoint the above described case is of particular interest because the formation of decubiti developed under direct hospital supervision.

After a relatively short interval following laminectomy, superficial pressure sores appeared in the sacral, calcaneous, ischial, and the calf region, regardless of the use of Stryker's device. Gradual extension and infection of the ulcers deepened and undermined their surface. Cultures disclosed mixed bacteria with predominance of the intestinal flora.

As the extension of the sacral ulcer was progressing, almost the entire sacrum became denuded and parts of the periosteum were equally involved. In view of this condition a plastic repair was undertaken.

Among the innumerable methods of repair of extensive sacral decubitus ulcers the most popular are: inshifting of pedicle flaps and linear closure of mobilized tissues.

In this case the preferred method of Croce, Schullinger and Shearer was used. The bony prominences of the sacrum were not removed; however, sporadic necrotic areas of the affected periosteum including its underlying outer bony layer, were chiseled away. The Croce, et al., mobilization method was used because of the presence of well nourished, sufficiently padded adjacent tissue. The too-frequent removal of bony prominences exposes the deeper strata to the incidence of osteomyelitis.

The mobilization method was performed without difficulty and linear closure completed the procedure.

High Thigh Amputation in Paraplegics Rehabilitation of the paraplegic is still at the early stage of experimentation and observation. Some paraplegics adjust themselves depending mainly on environmental circumstances and their personality make-up. Eco-

nomic factors are of importance for the prolonged survival of a paraplegic; nursing care and supervision are equally important factors.

Recently, for the purpose of rehabilitation in selected cases of paraplegia, a high amputation of the lower extremities was recommended. Such a radical procedure may seem, at first glance, quite drastic, but if we consider the helplessness of the average paraplegic and his gradual wasting-away, depending almost entirely on nursing care, this operation should be considered in an entirely different light.

At the last scientific exhibition of the Clinical Congress of the American College of Surgeons, held in San Francisco, October, 1956, the method of "Bilateral High Amputation in Paraplegics" was illustrated. The paper describing the amputation has yet not been published; however, through the courtesy of the authors, J. Harold Conn and William R. Fain, Assistant Chief of Orthopedics of the Department of Surgery, Veterans Administration Hospital and University of Mississippi Medical Center, Jackson, Mississippi, a summary of the above procedure was obtained. This information is quoted with the authors' permission.

Figure 12—This illustration taken 3 years later confirms that removal of bony prominence does not have to be generalized.

"HIGH THIGH AMPUTATION FOR REHABILITATION OF SELECTED PARAPLEGICS

The Problem: *During World War II, 2500 soldiers and 15,000 civilians became paraplegics due to cord injury and new casualties are constantly occurring. About 90% have now survived ten years or longer. Seventy percent of these eventually become wheelchair patients, and a small percent become bedfast or even confined to Stryker frame with uncontrollable decubiti and, occasionally, osteomyelitis. These may be plagued with calcinuria and urinary calculi. Malnutrition associated with poor appetite, reversal of A/G ratio or serum proteins and all other complications of patients on bed rest may occur. Profound lowering of morale which may simulate psychosis is not unusual. In the treatment of this last small group of patients, the use of bilateral high thigh amputations may have some value as an aid to rehabilitation. Only when all other methods have failed should amputation be considered.*

The Objective: *The objective of all treatment of paraplegics is rehabilitation. Mobilization, freedom from decubiti, better nutrition and improved morale are important steps in this direction. Mobilization is the key to success. This is best obtained in the form of ambulation. The next best is a successful wheelchair existence, but some*

of these patients become bedridden and spend much time in hospitals with uncontrollable decubitus ulcers in spite of every means of therapy. The objective is still rehabilitation and the most important part is mobilization.

Present Indications for Amputation: *Patients who have spent a large percent of their recent years in hospitals with decubitus ulcers which have finally become uncontrollable and in whom all other methods of rehabilitation have failed are now considered candidates for high thigh amputation, if it is felt that this procedure will make it possible to rehabilitate the patient. Possibly in the future these rigid indications may be broadened.*

Materials and Methods: *Five patients have now had bilateral high thigh amputations in our hospitals. In three cases very short stumps were left and this has proved ideal—removing a maximum amount of weight and giving maximum mobilization. The femur was divided just below the trochanter, the flaps were equal and were tapered to form a smooth stump. Two small drains were left in two days. Dressing was loose. Stumps were not wrapped with elastic tape. Healing of stumps required about two weeks.*

Results: *In three patients all decubiti healed "spontaneously" within two months after amputations were done. That is, no medication was used on the ulcers, only dry dressings. This contrasted with failure to heal with vigorous treatment during the months before amputation and it is believed to be due to increased activity of the patients with increased appetite and increased nutrition. One patient gained 40 pounds. There have been no further decubiti. One patient had extremely extensive ulcers which have now completely healed, and the fifth patient is in the immediate postoperative period. The most striking change in the group has been psychological. They feel they have changed from "helplessness to (comparative) independence." Morale is very high and there has been no evidence of the psychological trauma predicted by some.*

Expectations: *It is expected that this group of patients will not only be able to stay out of the hospital but that those who are otherwise capable will be able to return to gainful employment and a relatively normal life, even to doing some things which the usual paraplegic cannot do."*

The authors in justifying high amputation stress "mobilization, freedom from decubitus, better nutrition and improved morale" as the main objectives for the procedure.

The rehabilitative results obtained in several cases speak for themselves; however, the most dramatic change is psychological in nature when physical "helplessness" is felt to be replaced by "comparative independence." No regrets were ever expressed of having lost useless lower extremities, but to the contrary, it became a source of happiness.

Constipation and Its Prevention in Paraplegics A negative nitrogen balance resulting from the continuous loss of valuable electrolytes and plasma contributes to the superfluous retention of excessive bodily fluids. Static factors such as prolonged bed rest and the particular position adds to the watery imbibition of the intestinal tract.

Paraplegics with chronic extensive decubitus ulcers usually have negative nitrogen balance. Continuous oozing of open ulcers, depriving the body of es-

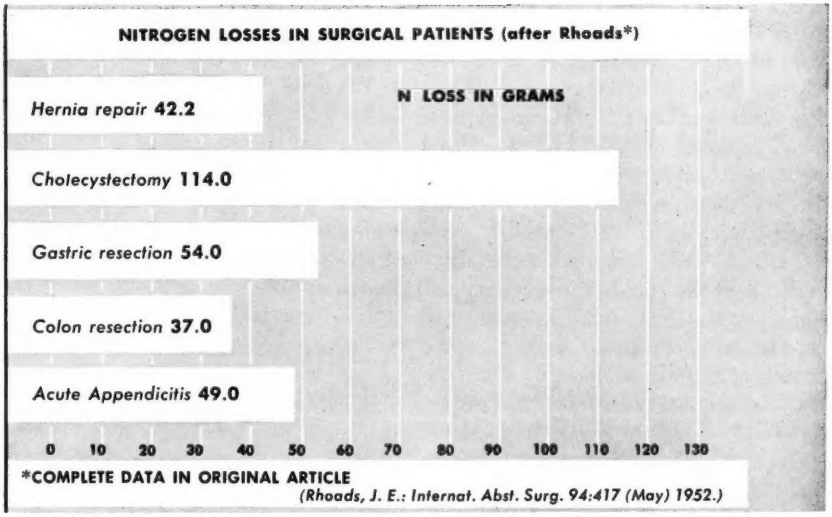

NITROGEN LOSSES IN SURGICAL PATIENTS (after Rhoads*)
N LOSS IN GRAMS
Hernia repair 42.2
Cholecystectomy 114.0
Gastric resection 54.0
Colon resection 37.0
Acute Appendicitis 49.0
0 10 20 30 40 50 60 70 80 90 100 110 120 130
*COMPLETE DATA IN ORIGINAL ARTICLE
(Rhoads, J. E.: Internat. Abst. Surg. 94:417 (May) 1952.)

Figure 13—Diagram demonstrating negative nitrogen balance from loss of plasma.

sential elements, causes a state of chronic hypoproteinemia. Edema is the result of such condition and the posterior part of the body is mostly affected because of the particular postural position.

Before generalized edema takes place in hypoproteinemia, occurring mostly in the supine position, transudate accumulates in the abdominal cavity. The intestinal tract is the first system of the body where imbibition takes place. Basic vital metabolic processes which occur in the GI system diminish conspicuously with progressive imbibition. The resulting retention of catabolic products in the body have adverse effect on the entire complex physiology.

Drastic means are urgently needed to prevent further damage and special attention is necessary for these subjects.

A high protein, mineral, and vitamin diet, carefully planned and tastefully prepared to individual needs is to be adopted. Plasma and blood transfusions are to be administered until the proper A/G ratio is corrected.

During the process of intestinal imbibition the absorption of vitamins and other elements are vital for the sustenance of the patient, and are to be administered intravenously to assure a minimum intake, and not depend on oral administration. Proper diuretics are to be rapidly installed to relieve intestinal and tissue imbibition, carefully checking the input and output. Electrolytes of the blood are to be checked periodically.

Hypertonic solutions of glucose and hydrolysates or amino-acids often have the ability to attract stagnant inter-cellular fluids and remove excessive imbibition. The administration of anabolizers are recommended to accelerate protein tissue building and are of paramount importance. The same principle applies equally to all major surgical cases where nitrogen losses take place.

A number of protein tissue builders, able to accelerate the anabolic processes

are available and highly recommended. Very seldom is there any contraindication for such treatment. These protein builders make the entire organism receptive to speedier protein synthesis and delay rapid elimination.

My personal experience with 17-alpha-ethyl-17-hydroxynoran-drospenone, or its generic name, the so-called "norethandrolone"* is quite encouraging. This anabolic product was obtained through synthesis and has endocrine effects on assimilation, similar to the results of androgenic therapy. Contrary to the original endocrine androgenic products with the prevalent effects of the sex hormone, norethandrolone has only slight androgenicity of about one-sixtieth that of testosterone. This product does not replace or interfere with the endocrine function of the gonads.

The described improvement resulting from the arrest of nitrogen losses, attributed to the anabolic effect of these synthetically produced endocrine-like norethandrolone products, has a great similarity—from a clinical psysiological standpoint to the utilization of synthetically produced insulin.

The general benefits of a corrected A/G ratio improves intestinal functions of absorption and also improves elimination in paraplegics, however, a positive protein balance does not entirely solve the problem of constipation.

In spinal cord injuries the intestinal reflexes are partially abolished and the sensation and call of defecation is completely destroyed. In paraplegia the contribution of the abdominal muscles in controlling endo-abdominal and intraluminal pressure of the intestine are completely abolished. The intestinal wall in paraplegics is at the mercy of gradual distension, especially the large bowel where terminal accummulation of matter reaches its destination.

The main dehydrating function of the large intestine remains intact in paraplegia and continues its function on stagnant material long overdue for evacuation. Progressive accumulation of fecal material and the steady dehydration that takes place in the large bowel, not only causes constipation but gradual centripetal intestinal distension.

Under normal conditions "vis-a-tergo" is an essential factor in daily eliminations. In paraplegics, however, this propelling force must increase conspicuously to cause equal evacuating results.

By filling the gastrointestinal tract with an artificial bulk product, defecation can be conditioned somewhat easier. Long experience with administration of artificial bulk products obtained from highly refined concentrated hydrophilic muciloid portion of the psyllium seed† (plantago ovata forsk) has been quite satisfactory for the production of large, formed, stools. The action of hydrophilic products are purely mechanical, causing a gradual distention of the intestinal lumen. Regular administration of this smooth bulk producer with the intake of sufficient fluids, has a continuous beneficial effect on elimination. This hydrophilic substance prevents prolonged storage of fecal material, thus diminishing the intestinal flora and the excessive absorption of toxic products.

The dosage of the described artificial bulk producer is to be established by the physician and great attention is to be given to sufficient hydration. Diminished intake of adequate amounts of fluids may occasionally cause undesirable effects due to excessive absorptive

* Nilevar—Searle

† Metamucil—Searle

capacity of the large intestine in paraplegics. Occasionally, regardless of proper hydration, some particular condition of the patient causes dehydration and interferes with the hydrophilic effects of the psyllium product. Such condition, however, occurs rather rarely, and may be prevented with the addition of a wetting product. There are a number of wetting products on the market; however, my experience with dioctyl sodium sulfosuccinate has been very satisfactory. The simultaneous administration of refined psyllium with dioctyl sodium sulfosuccinate* in appropriate cases not only increases the fecal volume but promotes wet eliminations, thus preventing occasional impaction caused by excessive dehydration.

* Doxinate—Lloyd Brothers

Summary

The prevention of decubitus ulcers following the onset of paraplegia depends upon environmental and intrinsic factors pertaining to the paralysis itself. Environmental circumstances causing decubiti are usually evoked by prolonged pressure, fecal contamination, maceration, and direct trauma. Intrinsic paralytic factors are: the flaccid stage of paralysis with its muscular atonia with resulting functional and mechanical ischemia, and finally the paralysis of the center of the neurovascular reflexes in the isolated cord. All these causes are more apt to occur in the flaccid stage of paralysis.

The spastic phase of paralysis may develop decubitus ulcers but the etiology is somewhat different. In the latter stage ulcerations usually follow an inflicted physical trauma caused by uncontrolled spasms. The circulation in the spastic stage of paralysis is usually improved. The lack of sensation, inability to move, and handling by inexperienced personnel easily contributes to increase trauma and susceptibility to secondary infections.

The great problem still exists: Can a severed spinal cord be united "per primum" to reestablish partial or complete voluntary function? The spastic stage of paraplegia is manageable to the above repair following the removal of existing scar tissue.

Placing of an artificial anus in irreversible paraplegia will not only improve the morale of the individual by being able to take care of himself, but will prevent uncontrolled fecal contamination of the genitalia, urinary tract, and decubitus ulcers.

A bilateral high thigh amputation in selected cases may change the entire outlook of a young subject with irreversible paraplegia.

The rehabilitating results following the above procedure may eliminate entirely the problem of pressure sores and the depressive attitude of these subjects, making them look forward to a brighter future.

Paraplegics are often subjected to frequent fecal impactions; intestinal obstructions are not too rare, and the accumulation of enormous amounts of matter contributes, with its weight, to cause more pressure. The endo-abdominal fecal accumulation, with added external pressure of the body, affects the interposed bodily regions to trophic disturbances.

Chronic impactions sometimes have to be surgically relieved. The admin-

istration of artificial bulk and wetting products increases the pace of fecal flow as a result of the augmented vis-a-tergo.

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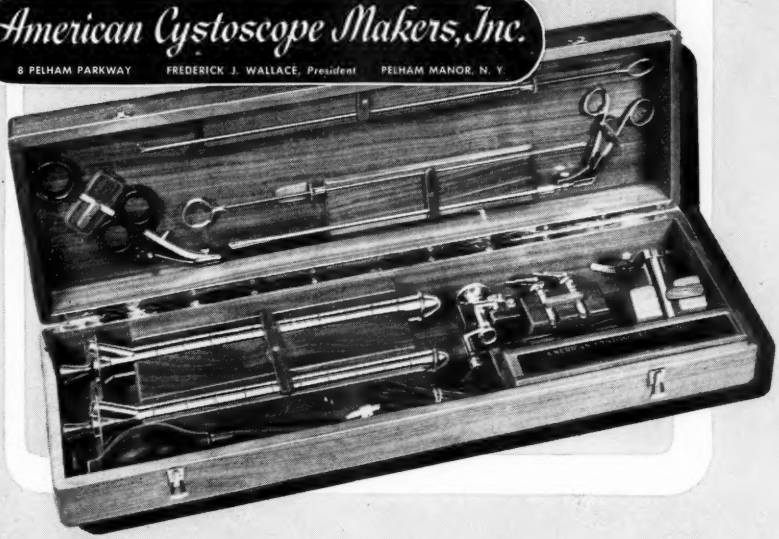

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Twenty-eight patients with diabetic diarrhoea are described, together with investigations of the condition and its treatment. Steatorrhoea was present in two of five cases investigated by fat-balance studies.

Studies confirmed the presence of normal external pancreatic secretion, and malabsorption, as found in the sprue syndrome, did not appear to be present. A mechanism of small- and large-intestinal hurry, due to autonomic nerve degeneration, is inferred.

Improvement with liver extract and folic acid was observed in a number of patients, but the improvement was not maintained. Oral administration of chlortetracycline was effective in controlling the diarrhoea in 16 of the 22 patients in whom it was tried.

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Compocillin-V with Sulfas, Abbott Laboratories, North Chicago, Illinois. Each Filmtab contains 125 mg. (200,000 units) of potassium penicillin V, 167 mg. of sulfadiazine, 167 mg. of sulfamerazine and 167 mg. of sulfamethazine. Indicated for treatment of mixed infections found in the respiratory or urinary tracts. *Dose:* As determined by physician. *Sup:* Bottles of 50.

Cosa-Tetracyn, Pfizer Laboratories, Division of Chas. Pfizer & Co., Inc., Brooklyn, New York. Capsules, each containing 125 mg. or 250 mg. tetra-

—Continued on page 160

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NEWER MEDICINALS

—Continued from page 158

cycline hydrochloride with glucosamine. Indicated for infections caused by gram-positive and gram-negative bacteria, rickettsiae, certain spirochetes, large viruses and protozoa. *Dose:* As directed by physician. *Sup:* 125 mg. in bottles of 25 and 100; 250 mg. in bottles of 16 and 100.

Cyclamycin, Wyeth Laboratories, Inc., Philadelphia, Pennsylvania. Triacetyloleandomycin, a new antibiotic derivative that effectively combats many infections resistant to erythromycin, the tetracyclines, penicillin and streptomycin. Indicated for pneumococcal and streptococcal pneumonia, and pneumonia caused by Haemophilus influenzae; urinary tract infections, pharyngitis, infected cysts, impetigo, infected ulcers, furuncles, carbuncles and cellulitis. *Dose:* Adults; 250 mg. to 500 mg. q.i.d. depending upon severity of infection. Children; According to age and severity of infection. *Sup:* Capsules, 125 mg. and 250 mg., bottles of 36.

Furoxone, Eaton Laboratories, Norwich, New York. Tablets, each containing 100 mg. furazolidone. Indicated in enteric infections. *Dose:* Adults, 1 tablet four times a day; children as directed by physician. *Sup:* Bottles of 20 and 100.

Lowila Emollient, Westwood Pharmaceuticals, Division of Foster-Milburn Co., Buffalo, New York. Contain Kerohydric (a dewaxed oil-soluble, keratin-moisturizing fraction of lanolin) in an acid buffered polyethylene glycol monostearate emulsion. Indicated for the treatment of excessively dry, scaly skin. *Use:* As directed by physician. *Sup:* Tubes of 62.5 gram.

Midicel, Parke, Davis & Co., Detroit, Michigan. Quarter-scored tablets each containing 0.5 Gm. sulfamethoxypyridazine. Indicated for urinary tract infections both Gram negative and Gram positive. *Dose:* Two tablets initially, 1 a day thereafter. *Sup:* Bottles of 24 and 100.

Neutrapen, SchenLabs, Inc., New York, New York. Powder consisting of purified penicillinase. Indicated for treatment of allergic reactions to penicillin by neutralizing the circulating

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penicillin. Also recommended in known penicillin-sensitive and allergic patients for prophylactic use with drugs and vaccines containing small amounts of the antibiotic. *Dose:* Intramuscular injection as directed by physician. Also given intravenously. *Sup:* Single-dose vials containing 800,000 units in powder form, for reconstitution.

Percodan—Demi, Endo Laboratories, Richmond Hill, New York. Pink tablets containing just half the amount of dihydrohydroxycodeinone and homatropine present in Percodan. Indicated as a fast-acting, long-lasting oral medication for thorough pain relief. *Dose:* One tablet every six hours. *Sup:* Bottles of 100, 500, and 1000.

Vioform-Hydrocortisone Lotion, Ciba Pharmaceutical Products, Summit, New Jersey. Contains 3% iodochlorhydroxyquin and 1% hydrocortisone. Indicated to provide antifungal and antibacterial action together with antiinflammatory and antipruritic effects. *Use:* Apply 3 or 4 times daily. *Sup:* Plastic squeeze bottles of 15 ml.

Vi-Sorbin, Smith, Kline & French Laboratories, Philadelphia, Pennsylvania. Tonic, each 15 cc. of which contains 25 mcg. B_{12}, 6 mg. B_6, 300 mg. ferric pyrophosphate (36 mg. of elemental iron), and 1.5 mg. folic acid, plus D-sorbitol as the absorption enhancement factor. Indicated as a vitamin supplement, particularly in geriatric, obstetric, adolescent and convalescent patient. *Dose:* 16 cc. per day. *Sup:* Bottles of 8 oz.

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BOOK REVIEWS FOR PROCTOLOGISTS

ULCERATIVE COLITIS by Harry E. Bacon, M.D., Sc.D., L.L.D., F.A.C.S., F.A.P.S., Professor and Head, Department Proctology, Temple University Medical Center, Diplomate American Board Surgery, President, American Board Proctology, Honorary Fellow, Royal Society of Medicine, Philippine College Surgeons, International College Surgeons, Brazilian College Surgeons, Japanese College Surgeons — 395 pages — 184 illustrations — published by the J. B. Lippincott Company —price $15.00.

This is a very fine monograph on a difficult subject. As is usual with all the writings of this author, the research has been very carefully done, the bibliographies are excellent, and the approach conservative from the point of view of the surgeon.

The major thesis is that 20 to 30% of these cases require surgery, and that surgery should not be delayed in such cases.

The author has little use for the psychosomatic or psychiatric approach, and feels that in some instances the patient is kept from appropriate surgery to the disadvantage of that patient.

The monograph is based on the records of 400 patients seen over a 17 year period. This is a large series, and in the hands of a capable observer such as Dr. Bacon, it has yielded a remarkable wealth of material.

The photographs of specimens removed by colectomy, the barium enema roentgenograms, the microscopic studies, and the drawings, all round out a very fine text.

The section on surgical therapy is very complete, and beautifully illustrated.

In the opinion of this reviewer the author's conclusions are generally sound, and the textbook should be in every proctologist's library.

One minor point should be mentioned, and that is that this reviewer has seen one case of chronic ulcerative colitis in which periods of pregnancy were the only months during which the patient was free from the disease. This runs contrary to the usual picture.

INTRODUCTION TO ANESTHESIA by Robert D. Dripps, M.D., Professor and Chairman, Department of Anesthesiology, Schools of Medicine, University of Pennsylvania, Anesthetist, Hospital of the Uni. of Pennsylvania, Philadelphia, Pennsylvania, James E. Eckenhoff, M.D., Professor of Anesthesiology, Schools of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, and Leroy D. Vandam, M.D., Clinical Professor of Anesthesia, Harvard Medical School, Director of Anesthesia, Peter Bent Brigham Hospital, Boston, Mass. 266 pages—price $4.75—published by the W. B. Saunders Company.

This excellent little volume represents to a large extent the personal philosophy and teachings of the Senior Staff at Pennsylvania. As such, it is very valuable and adds considerably to the larger technical volumes on anesthesiology. There is fundamental material in the book on technics, drugs, etc. However, the reader must not expect an encyclopedic detail in this volume.

The lack of such detail is compensated for

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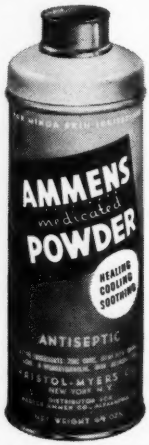

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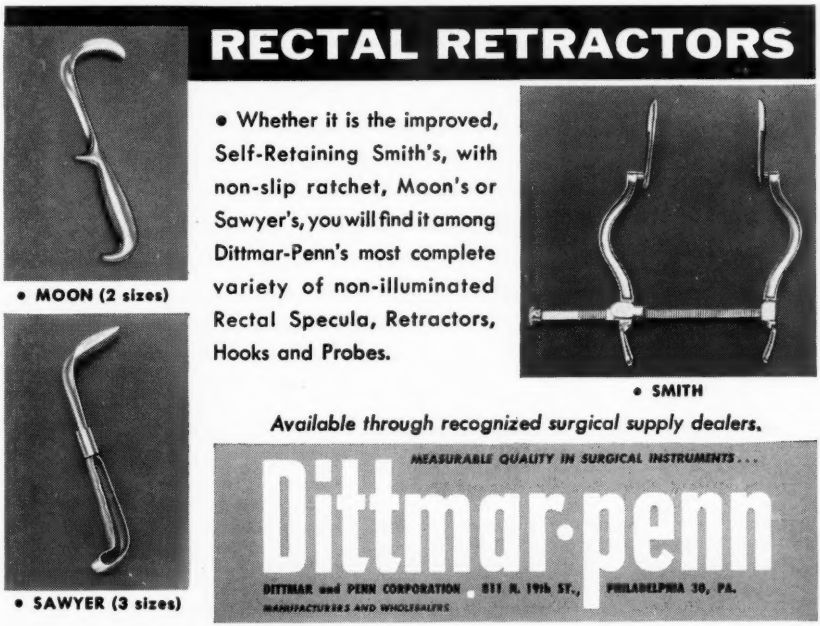
by the wealth of personal observation and experience represented in the various chapters. Although the specialized aspects of anesthesia such as deliberate hypotension, hypothermia, regional anesthesia, hypnosis, will not be found in this volume, the material included will be of great value to the students of anesthesia. The established anesthesiologists will also find much of interest.

AGING AND DISEASE. (Altern und Krankheit.) Max Buerger. Director of the Medical Clinic of the Univerity, Leipzig. 648 pages, 348 illustrations. 3rd edition. Georg Thieme, Leipzig. 1957.

Buerger has studied the problem of aging on human and animal organs for more than thirty years. He started with the realization that the course of all diseases is under the influence of aging, that is, that all diseases act differently at different age levels, and that they are decisively influenced by the physiology of aging. In an extensive program, Buerger has examined the changes of the organs and their functions in humans, in the course of life, and he has studied this relationship to the different diseases. Buerger is of the opinion that disease is a disturbance of the physiology with impairment of the functions of the organism or its parts. The author comes to this conclusion from the evidence of his vast material and calls it "Biorheutic Nosology".

His book is the report of his thirty years of work, in cooperation with his associates. It has become the outstanding publication in Germany in this field. The first part is devoted to the general topic of the physiology of aging. The second portion deals with the course of diseases in various age groups. In the first part of the book, different theories are discussed, and the processes of aging of different organs are described; changes in tissues, organs and organ-systems are explained. The clinician will be especially interested in the second part of the book, which contains mostly medical conditions with many new findings. In the many chapters, various diseases and the difference in their course at different ages, is discussed. The course of a disease changes according to the age of the patient. The factor of age, according to Buerger, not only the chronological age, but also the biological age, is of the greatest importance. He also emphasizes that it is not enough to diagnose a disease, but equally important to treat sick people.

In reading this book, we respect the mag-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nitude of the precise results of science and the clear presentation of facts. This book, now in its third edition, belongs to the best in this field of the German medical literature. It will be of the greatest interest to all internists. The print is clear, the illustrations are excellent. It is written in German. We hope an English translation will soon be available. We can recommend it highly and want to congratulate Buerger on his outstanding scientific achievement.

Franz J. Lust

THE NEUROSES IN CLINICAL PRACTICE by Henry P. Laughlin, M.D., Assistant Clinical Professor of Psychiatry, George Washington University School of Medicine, Head, Psychiatry and Neurology Division, Suburban Hospital, Bethesda, Maryland, Consultant in Psychiatry, Walter Reed Army Medical Center—802 pages—price $12.50—published by the W. B. Saunders Company.

This volume begins with a quotation from the new testament, Matthew 7:12, "All things whatsoever ye would that men should do to you, do ye even so to them". This reviewer cannot help but think that medicine would change radically in its practice if physicians were really to follow the golden rule.

Although it would be interesting to consider the author's motivation in selecting this quotation to head his text book, and might help a great deal in understanding his points of view, the attempt will not be made at this time. We need only say that the author has done an excellent job in his presentation of the neuroses in clinical practice.

The cases presented to illustrate the important points do so in a very helpful fashion. Diagnosis, symptoms, psychodynamics and treatment are discussed in interesting detail.

The general practitioner, the internist and the surgeon all will find this book to be one of the best reference works in the field. Reading is easy, the material presented by the author is applicable to all forms of practice, and with the present emphasis on psychosomatic medicine, this is a volume that should be in the library of every physician.

PRINCIPLES OF UROLOGY by Meredith F. Campbell, M.S., M.D., F.A.C.S., Emeritus Professor of Urology, New York University. Consulting Urologist to Bellevue Hospital, New York; to Variety Childrens Hospital, Miami, and to St. Francis Hospital, Miami Beach, Florida; Lecturer in Urology, University of Miami School of Medicine. W. B. Saunders Company, Philadelphia & London, 1957. 622 pages. 319 figures.

This excellent text will be particularly valuable for the student. It is not a complete refer-

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ence book, nor is it intended to be. However, it is sufficiently broad in its approach to fundamentals to be of great value for the general practitioner and the surgeon who sees many urological problems in his practice.

The review of urologic semantics is a clever idea for this textbook. The review of urologic anatomy and physiology will be welcome to all practitioners.

There are excellent illustrations of minor urologic office procedures. Indeed, the illustrations throughout are very good and very adequate.

The writing is good, and it seems that the author has the student in mind at all times. Thus, there is an interesting chapter of questions with page references to the answers.

The text is recommended for all physicians and medical students.

DERMATOLOGY by Donald M. Pillsbury, M.D., D.Sc., (Hon.), M.D. Professor and Director of Department of Dermatology, University of Pennsylvania School of Medicine, Onetime Chairman, Subcommittee on the Cutaneous System and Member of the Committee on Medicine and Surgery, National Research Council, Member of National Advisory Health Council, United States Public Health Service, Director, Commission on Cutaneous Disease, Armed Forces Epidemiological Board, Walter B. Shelly, M.D., Ph.D., Associate Professor of Dermatology, University of Professor of Dermatology, University of Pennsylvania School of Medicine, Chief of Dermatology Clinic, Hospital of the University of Pennsylvania, Member, Subcommittee on the Cutaneous System, National Research Council, Area Consultant, Dermatology, Veterans Administration and Albert M. Kligman, M.D., Ph.D., Associate Professor of Dermatology, University of Pennsylvania School of Medicine, Associate Professor of Dermatology, University of Pennsylvania Graduate School of Medicine—1331 pages—published by W. B. Saunders Company—price $20.00.

This excellent volume is directed chiefly to the student and the practicing general physician. However, the dermatologist will find it a welcome addition to his library. The book begins with special emphasis on the normal functions of the skin, follows with a diagnostic system, and considers treatment in the order of preference.

Dermatologic terminology is ordinarily very complex, but these authors use a single label wherever possible.

The clinical discussions are excellent, and the illustrations are very good indeed. They are taken chiefly from the practice of the authors rather than from previously published textbooks.

This is a very fine text, and should be in every general practitioner's library.

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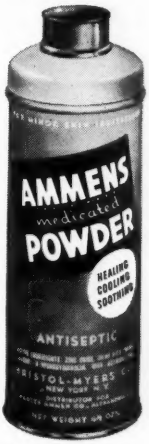

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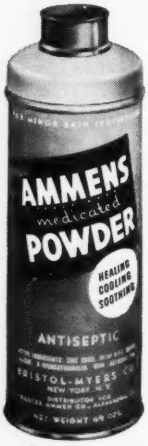

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1. Brooks, L. H.: Use of Malt Soup Extract in Treatment of Pruritus Ani, (American Proctologic Society, April, 1957. To be published.)

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